Portfolio

# Gyeom Chung

Selected Works 2022-2023

Columbia GSAPP

Master of Science. Advanced Architectural Design '23

## Trans-Scalar Intervention

01 Resourceful Network

02 Ice Research Preservation

03 Converting Hazard to Recreation

## Construction Methodology

04 Tensile/Compression Surfaces

05 Rethinking BIM

06 Seminar of Section

07 Techniques of the Ultrareal

## Measurement

08 Immeasurable Sites

09 Historty of Architecture Theory

10 Transsclarities

# Trans-scalar Intervention

01 Resourceful Network

Waste Management Infrastructure | AAD Studio Summer

02 Ice Research Preservation

Ice Core Research Center | AAD Studio Fall

03 Converting Hazard to Recreation

Water Filtration Facility | AAD Studio Spring

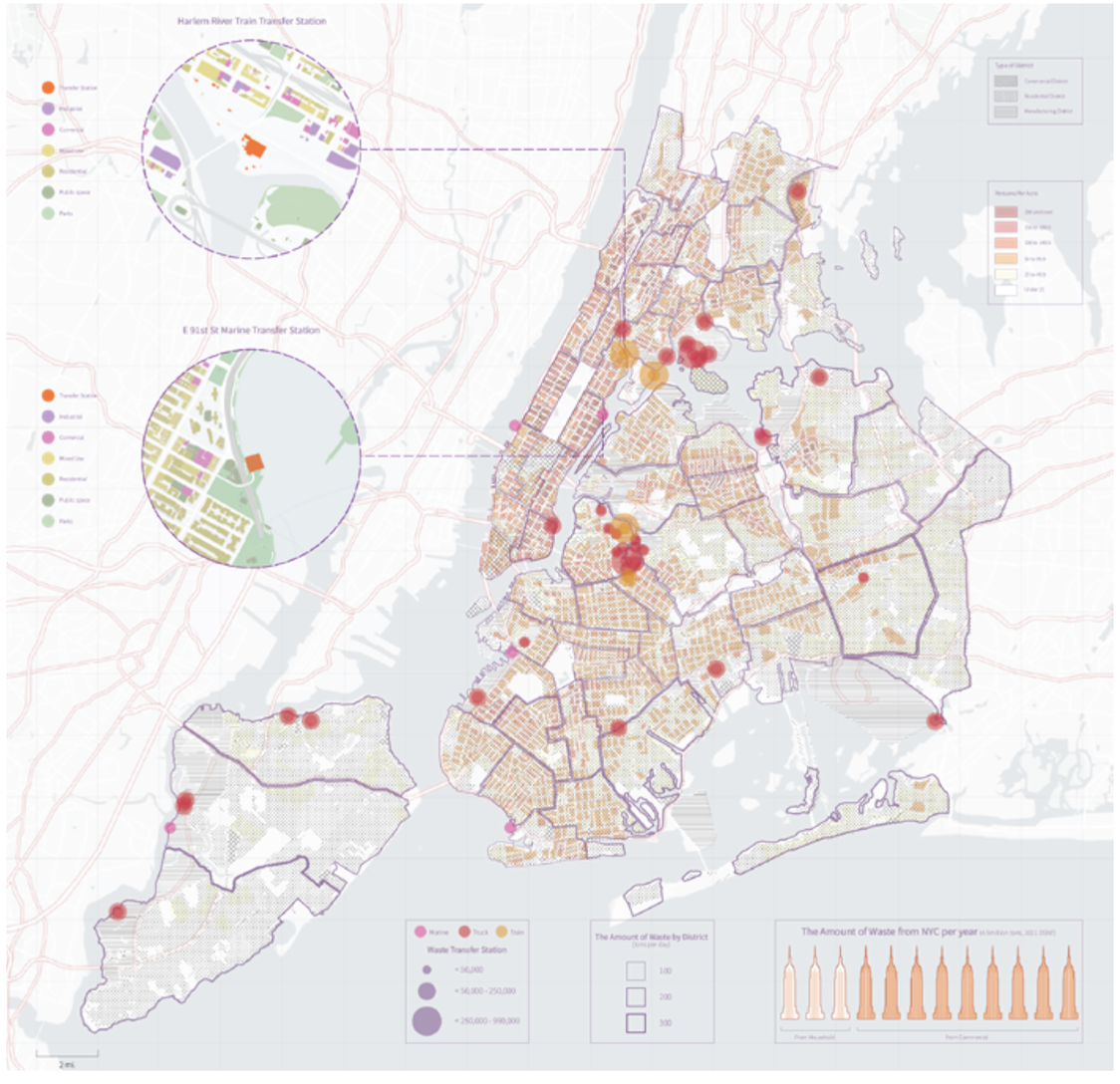
# 01

# Resourceful Network

Year : 2022
Location : New York, NY, USA
Type : Waste Management System
Instructor : Karla Rothstein
Role : Team work (3 members)

## New York City Waste Mapping

Distortion Map : Waste Production per Population Density

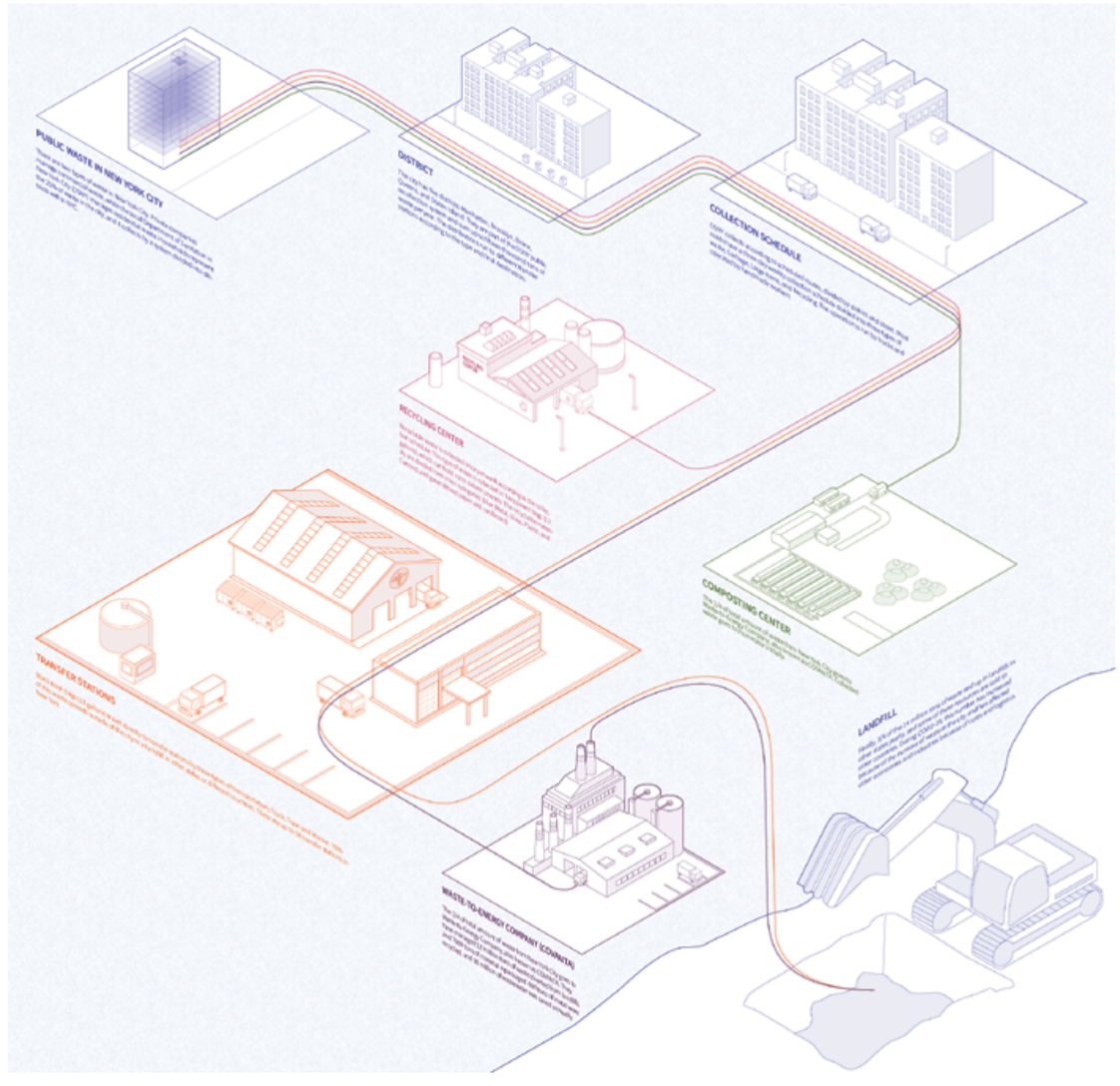



## New York City Urgency : Waste

NYC produces approximately 14 million tons of waste annually, spreading to landfills in other states. We seek to change the perception of waste, looking into the concept not as a noun but as a verb, the action when a resource is being squandered, as a way of proposing strategies to see this element not as a problem but as an asset. The project looks into each category of waste to design a system of in-situ local infrastructures that can turn its current spreading cycle into a full circle.

### Waste Journey by Categories

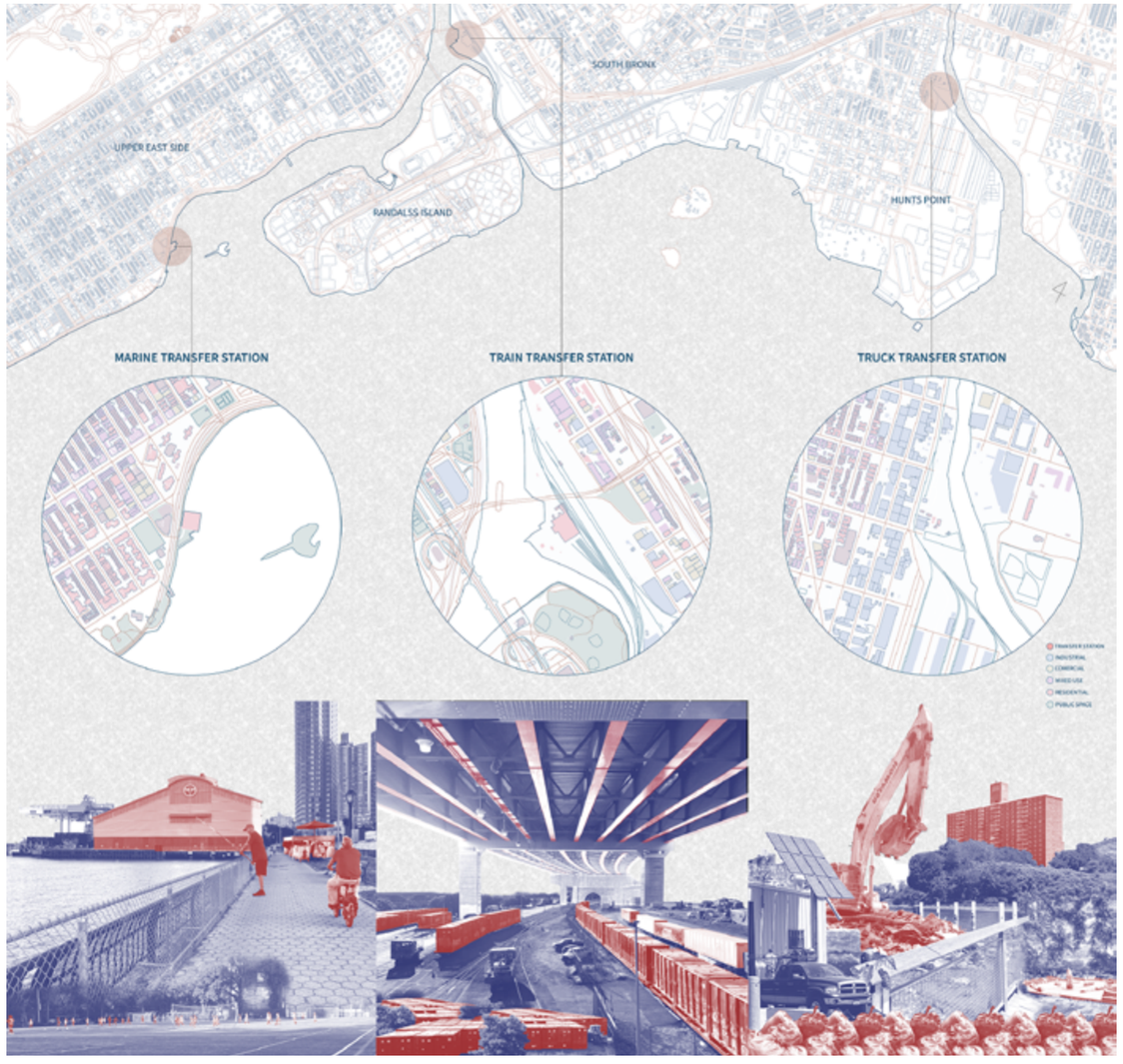
Approximately 1/4 of New York City's household waste goes to Waste-to-Energy Center, COVANTA, and most of the rest goes to landfills located in different states or countries, causing legal, ethical, and economic problems.



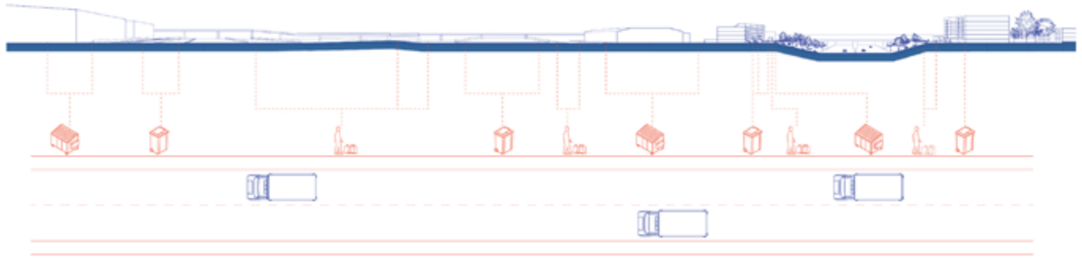
# Train Trasfer Station, Mott Haven

There are three different kinds of transfer stations in NYC: Marine, Train, and Truck. This project starts with the train transfer station in South Bronx as a prototype of new type of waste management center. After visiting site as urban immersion, compared to other stations, this station in Mott Haven has the weakest interaction with public system and requires architectural propose to improve the city environment and human interaction.



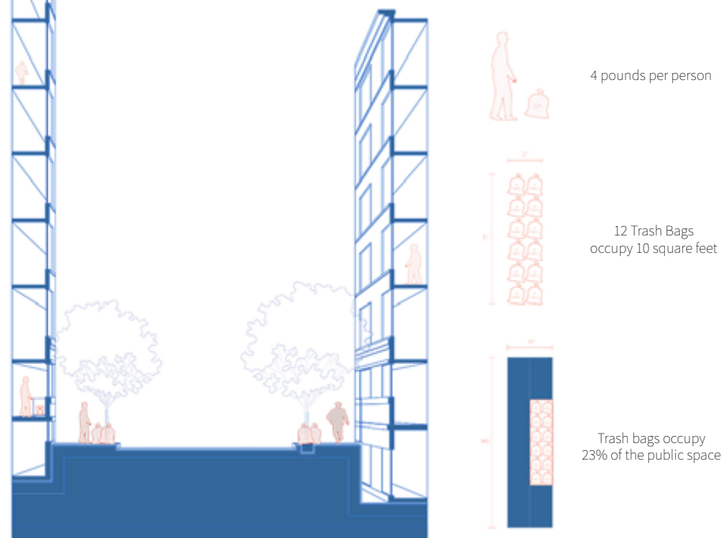




# Trash Bags Occupying Street Area

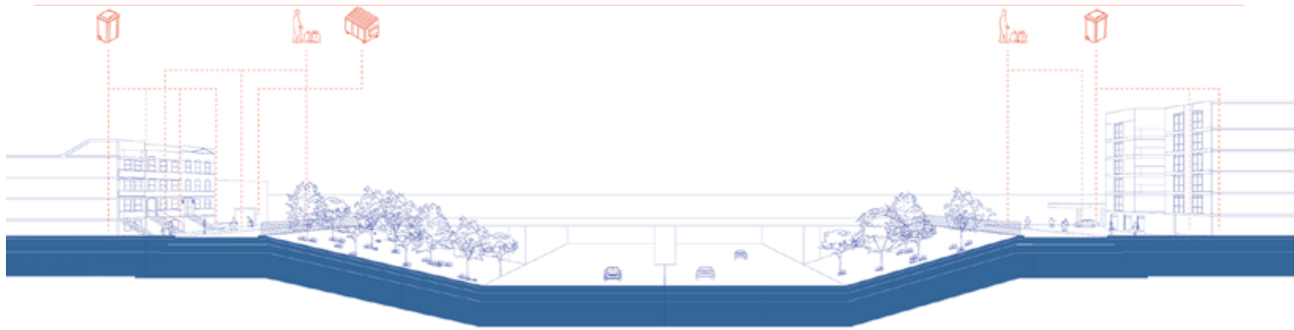


There are two ways of  waste collection system:  Collected by Department of Sanitation or by commercial. Two systems are run by trucks requiring many street areas because the waste has to wait for each collection schedule. It affects the  sanitary street environment significantly and is increasing currently due to covid-19.

Currently, 23% of the sidewalks in most of the streets in New York City are occupied by trash bags. This is equivalent of 4 pounds of waste produced by every person every day in the city, and according to the collection schedule from the Department of Sanitation, which collects waste every two days.

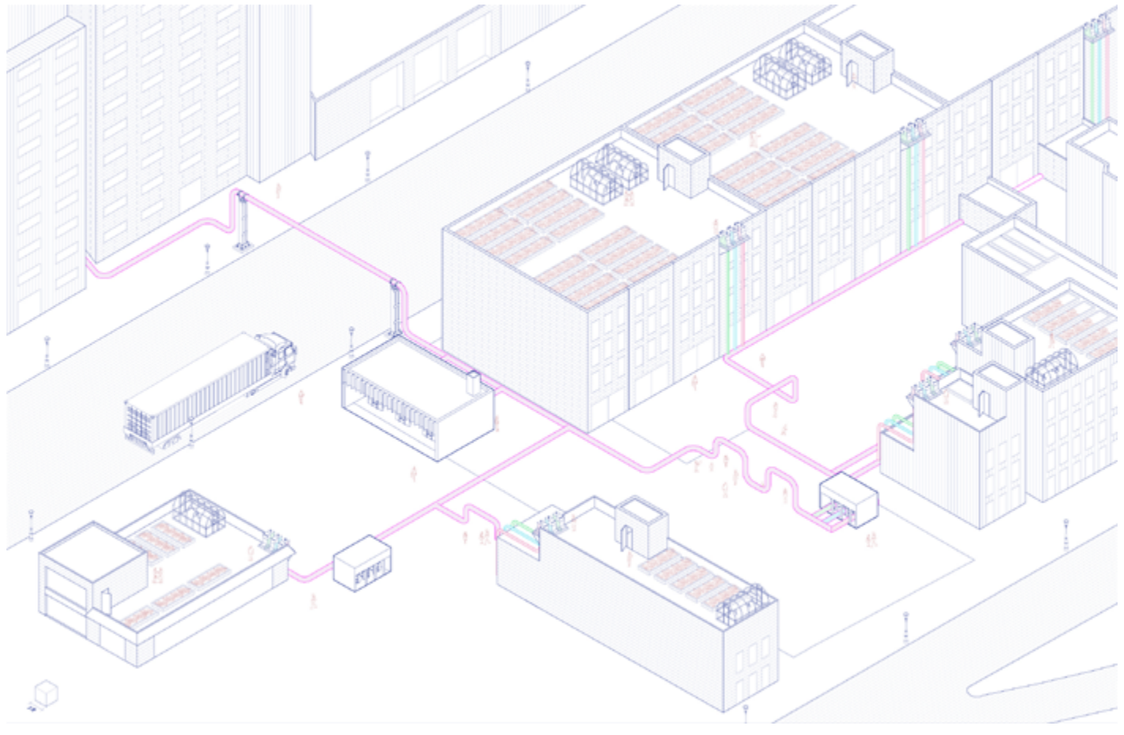



Street Section



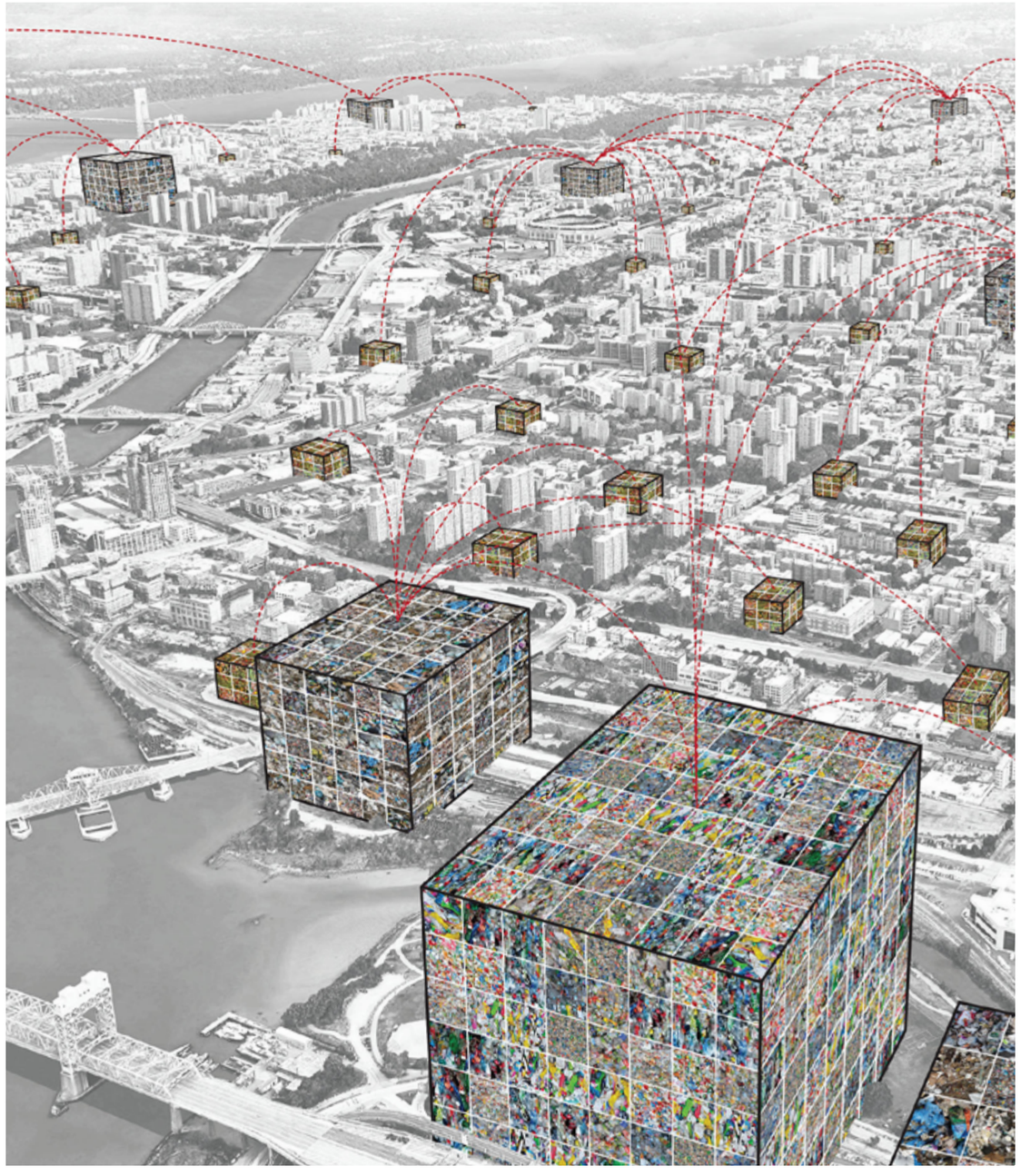
## Collection System with Ferry and Pneumatic System

To build a resourceful network, the current collection system has to be changed more efficiently. This project suggests a pneumatic system to directly collect and transfer the waste from households to particular collection areas, but separately by type of waste: green, blue, and black beans. The rooftop area becomes a new collection area and also can become an organic community garden. Pipes from the pneumatic system not only become a part of the city landscape and make joyful human interaction but also make the process visible so that people can be aware of the waste management system. The rooftop area becomes a new collection area and also can become an organic community garden. Pipes from the pneumatic system not only become a part of the city landscape and make joyful human interaction but also make the process visible so that people can be aware of the waste management system.



## Resourceful Network in Bronx

The waste collection system primarily works as a network run by ferries to decrease the ineffectiveness of collecting by trucks, using waterways to carry waste as a material for upcycling. The waste collection system primarily works as a network run by ferries to decrease the ineffectiveness of collecting by trucks, using waterways to carry waste as a material for upcycling. The waste collection system primarily works as a network run by ferries to decrease the ineffectiveness of collecting by trucks, using waterways to carry waste as a material for upcycling.



# Making the Waste as an asset for the City

The liminal spaces become a working space for creators in the Bronx, using waste as material for their artwork and upcycling system. Each type of waste is reproduced; plastic to clothes, paper to books, metal to furniture, glass to glass artworks. Currently, creators and artists in the Bronx are leaving due to the dirtiness and risk of the borough. This new infrastructure can become an incubator for them, utilizing waste as an asset. Eventually, this process gives them monetary authority by selling their innovative products, such as clothes, books, furniture, and glass artworks, so that the waste produced in New York City can stay in the city and not spread any more.

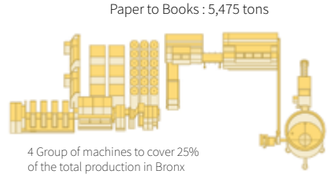
## Recycling and Upcycling Process

Capacities and Quantaties Projection for a Yearly Management

Sorting Process : 240,000 tons

1 Group of machines to cover 25% of the total production in Bronx

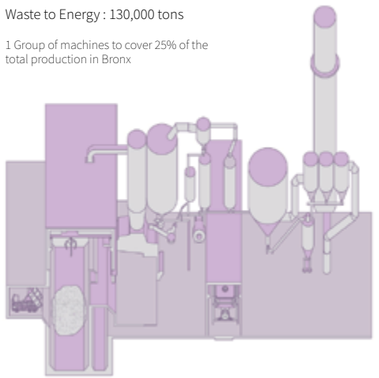
Paper to Books : 5,475 tons



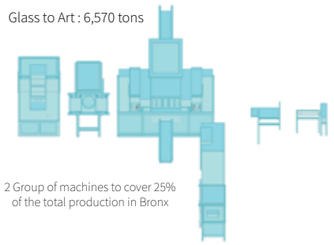
4 Group of machines to cover 25%
of the total production in Bronx

Waste to Energy : 130,000 tons

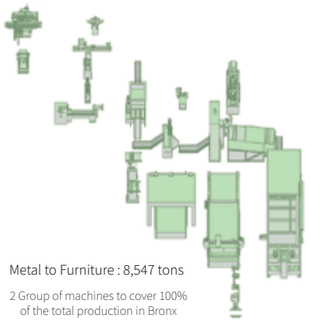
1 Group of machines to cover 25% of the
total production in Bronx



Glass to Art : 6,570 tons

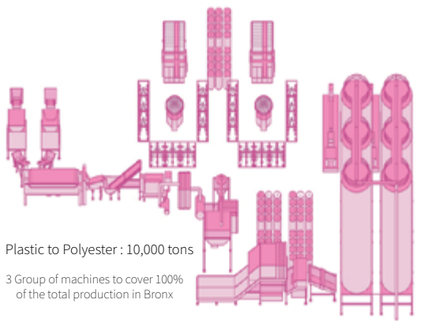


2 Group of machines to cover 25%
of the total production in Bronx



Metal to Furniture : 8,547 tons

2 Group of machines to cover 100%
of the total production in Bronx

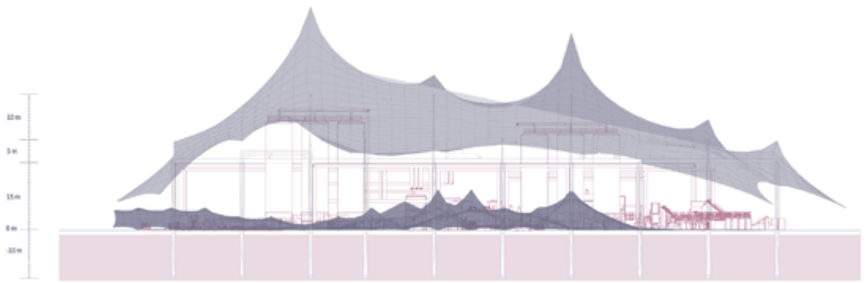


Plastic to Polyester : 10,000 tons

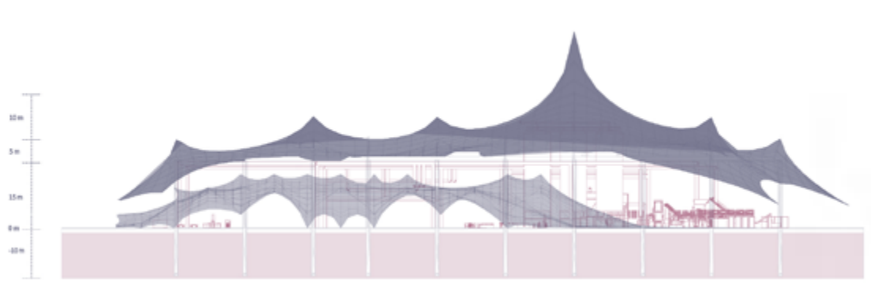
3 Group of machines to cover 100%
of the total production in Bronx

## Evolution System : Membrane Structure with Liminal Spaces

The inner space is defined by membrane structure made by etfe film and machines by each process: plastic, paper, metal, and glass, and the number of machines are calibrated depending on the amount of waste produced. This project is optimizing that people will produce their waste less in the future due to the improvement of the waste collection system and designing the evolution system according to the end. Machines are displayed by process and make liminal spaces between them, which work as a public area, developing in particular phases. Membrane structures and columns are flexible to embody this system; the outer membrane defines the whole waste management infrastructure, and the inner membrane defines liminal spaces inside for people. The liminal spaces become a working space for creators in the Bronx, using waste as material for their artwork and upcycling system, eventually giving them monetary authority by selling their innovative products such as clothes, books, furniture, and glass artworks.

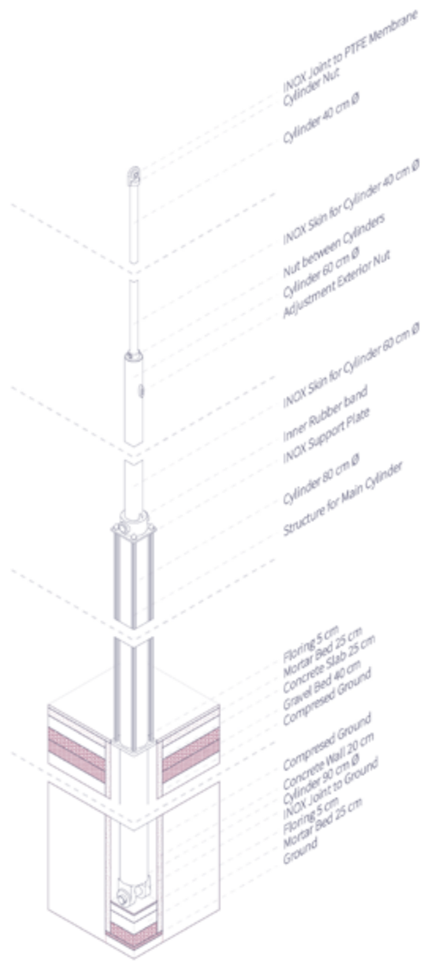


Starting Phase : Full Amount of Machines



Ending Phase : 1/3 of Machines Remaining

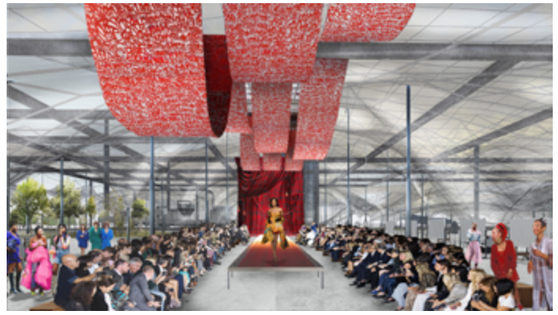
Piston Column Detail




## Evolution Scenario - The Process of Plastic

Phase 1 : Educational Area

Phase 2 : Workspace for Creators

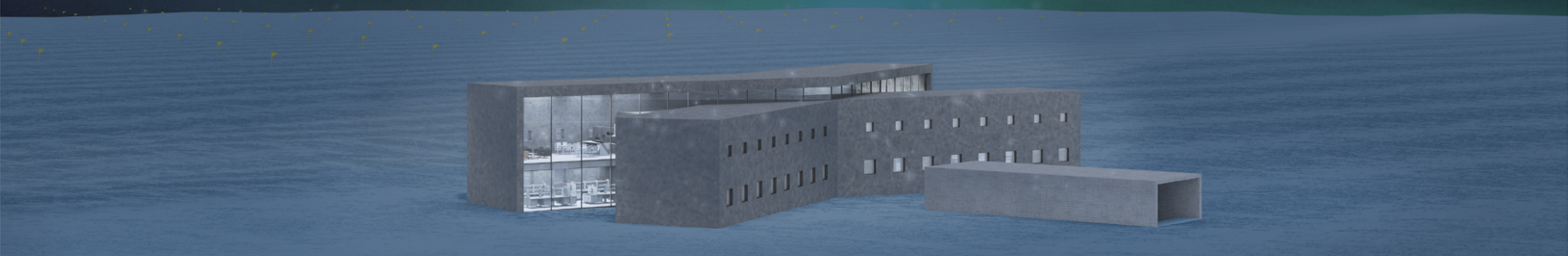


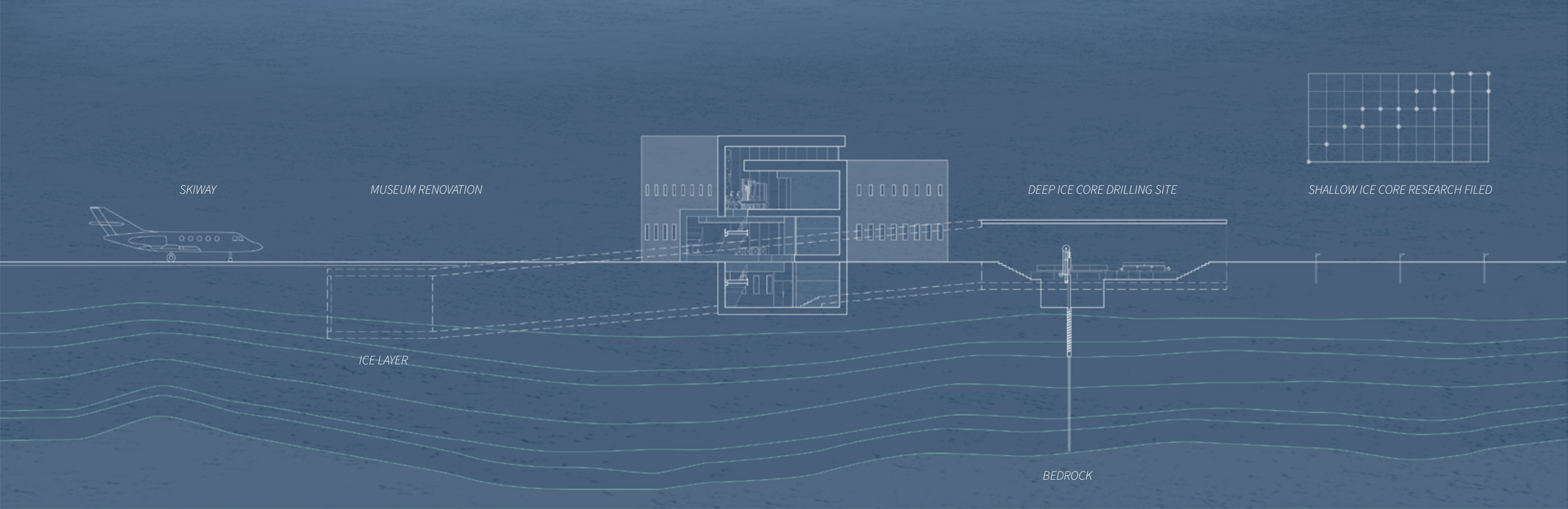
Phase 3 : Event Venue

# 02

# Ice Research Preservation

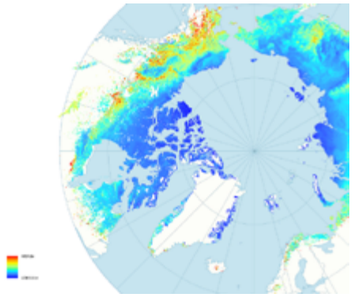
Year : 2022
Location : Greenland
Type : Ice Core Research Center
Instructor : Leslie Gill, Khoi Nguyen
Role : Individual Work





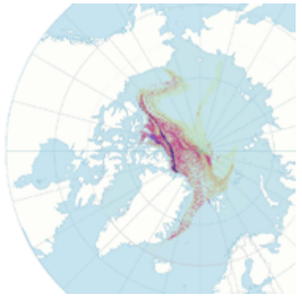
## Ice Preservation

Since Arctic ice is melting, preserving ice has become more crucial than before. The maps about Active Layer Thickness and Sea Ice Thickness show how fast ice in the Arctic melts, so they visualize the importance of preserving ice for future climate research. Scientists are using ice cores for research because of their rich information. Ice cores are drilled from ice sheets, Greenland and Antarctica. Greenland has the most stable ice sheet in the Arctic, which has the lowest difference between Active Layer thickness, which means it is the perfect location to drill ice cores to study the history of climate change. Numerous ice cores have been drilled in Greenland for several decades in different locations, mainly in high-altitude areas.



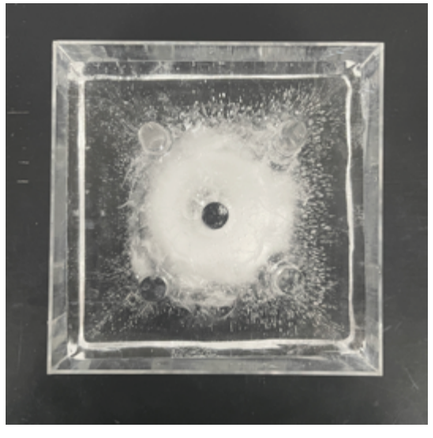
Active Layer Thickness

Sea Ice Thickness, 1984



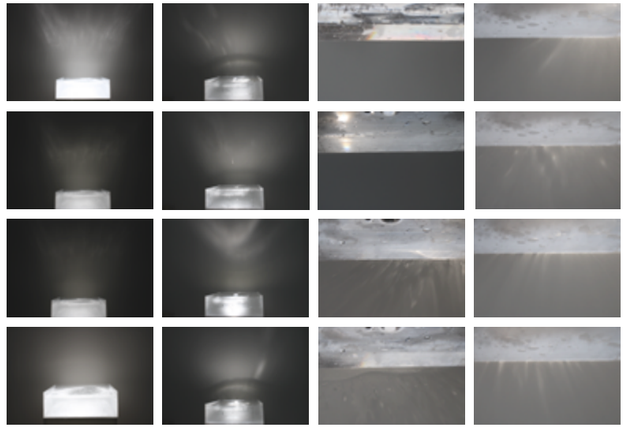
Sea Ice Thickness, 2022

## Shadow Box Light Study



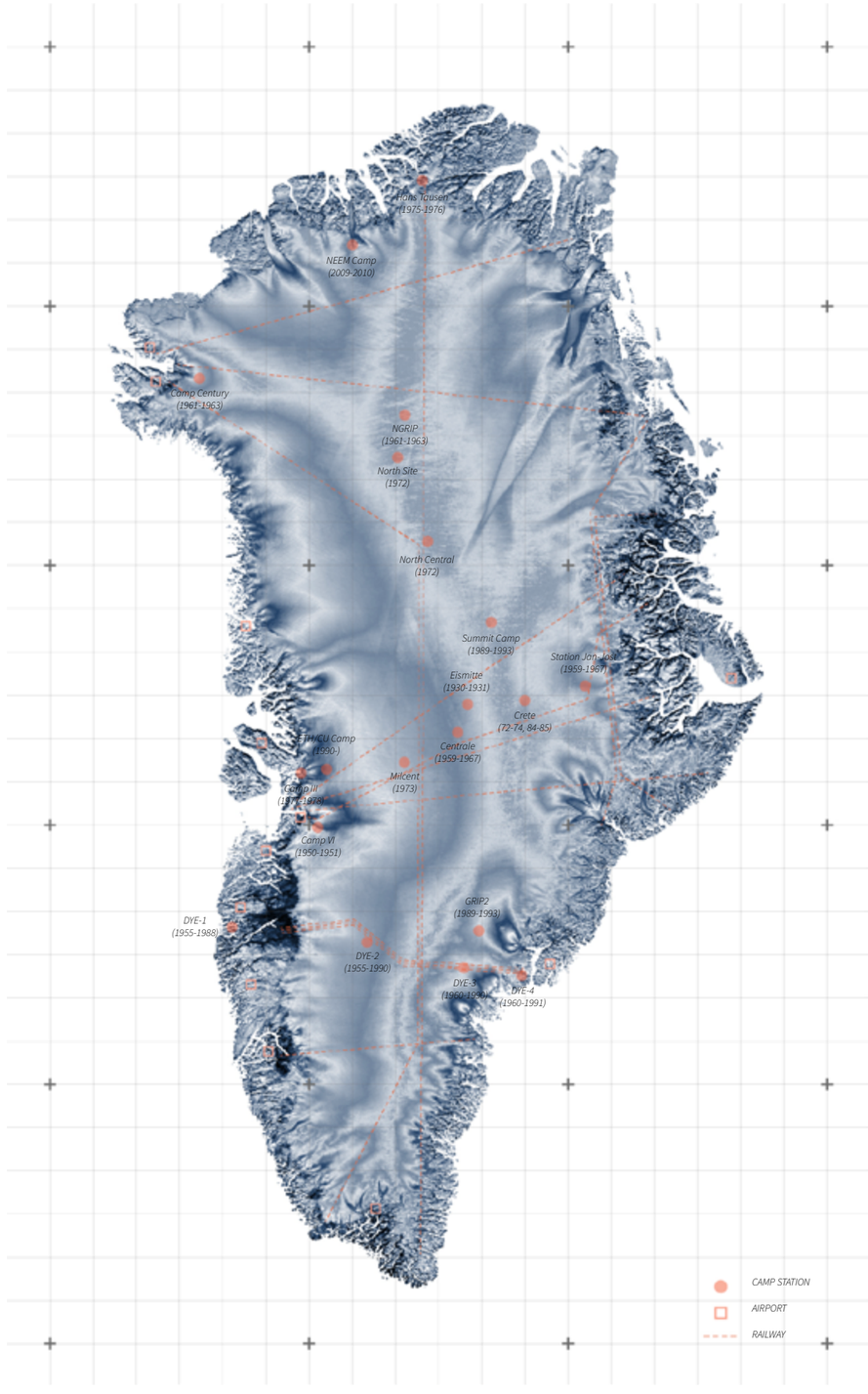
Ice freezed in an acrylic box on top of the shadow box

The Arctic has a unique light condition; it is bright all day during summer and dark during winter. Hence, it is crucial to absorb daylight from outside to inside during summer and emit artificial light from inside to outside during winter to prevent accidents for people and flying objects such as helicopters. This study aims to study how the building absorbs and emits artificial light in the shadow box under strict-controlled conditions. The project's initial idea was to create light refraction under the ice and water since ice core drilling is working under the ice. Moreover, this study shows how light is refracted and emitted with ice and water. Light is refracted in diverse directions; even artificial light comes from one side and sometimes creates a rainbow like a prism.



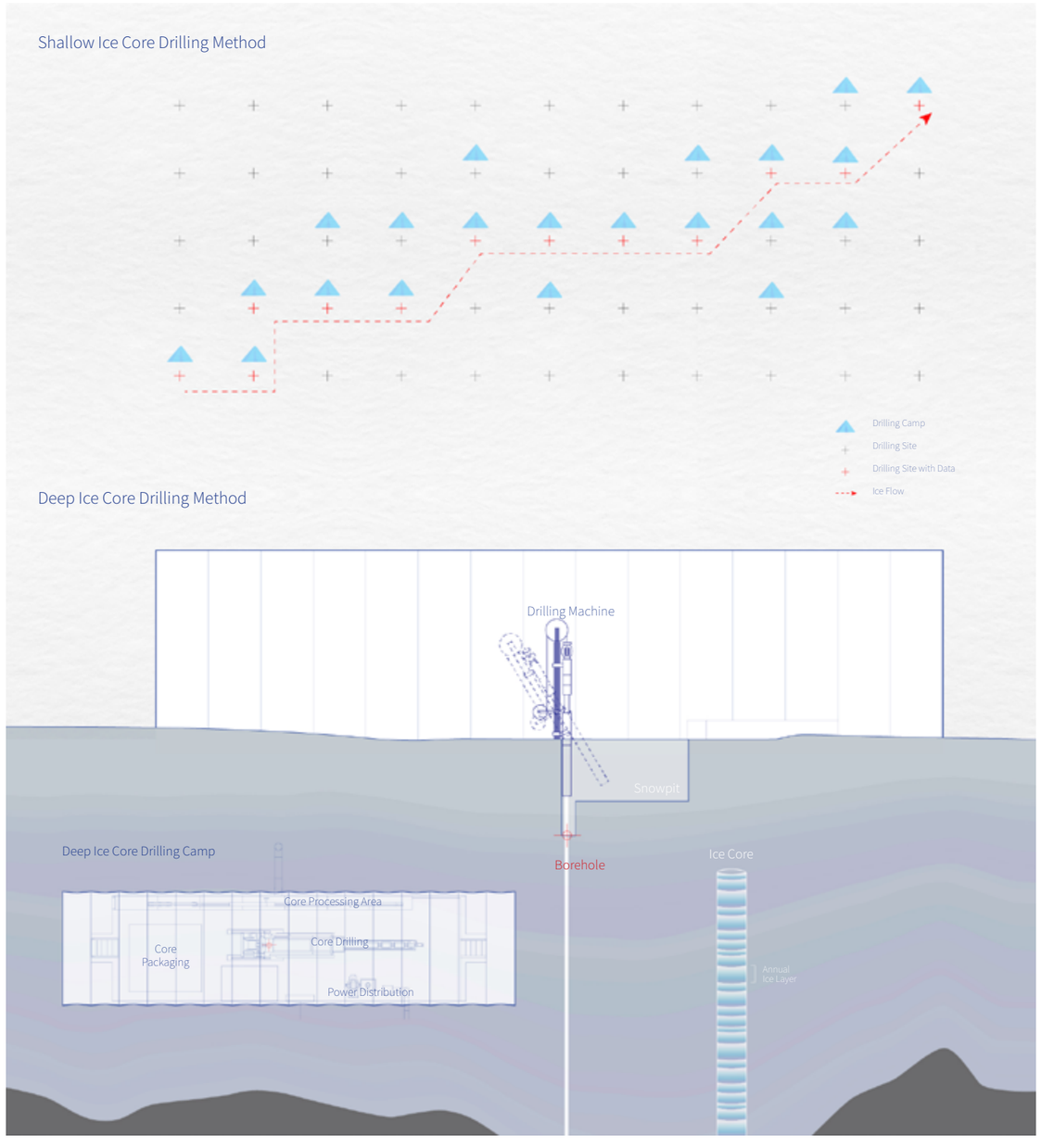
Winter, Ice  Winter, Water  Summer, Ice  Summer, Water

## Previous Ice Core Drilling Projects in Greenland



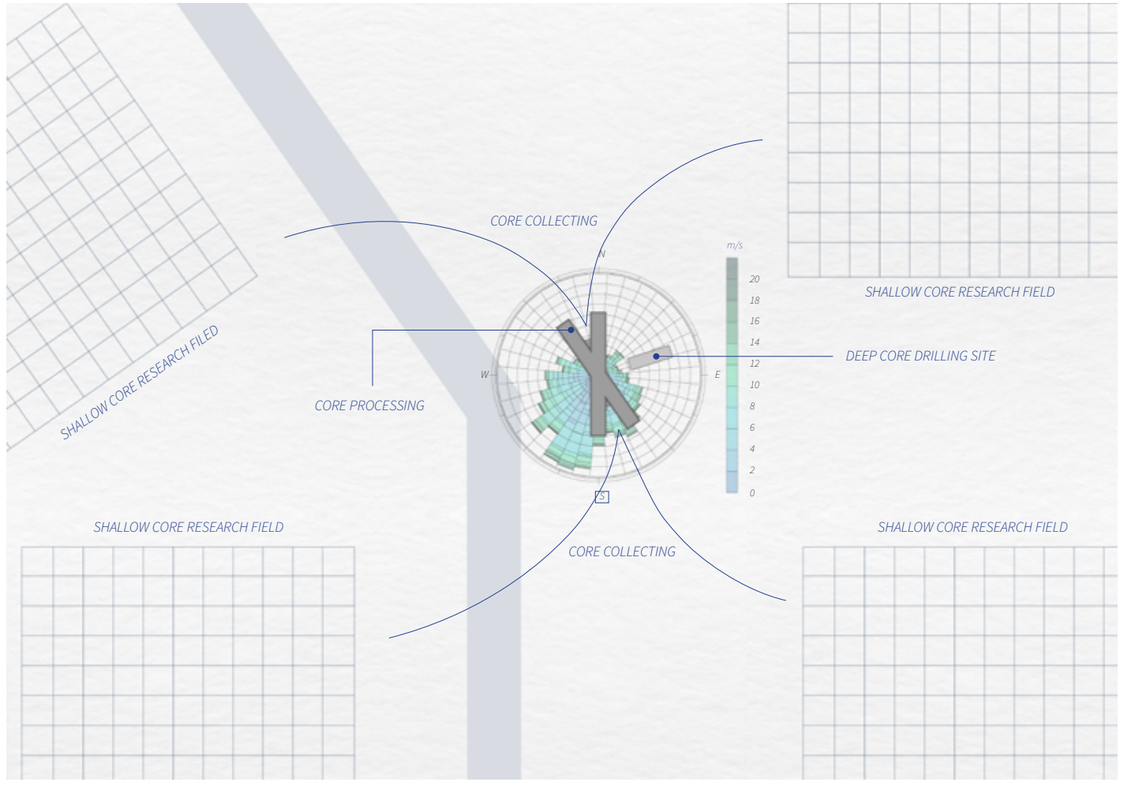
## Ice Core Research Methods

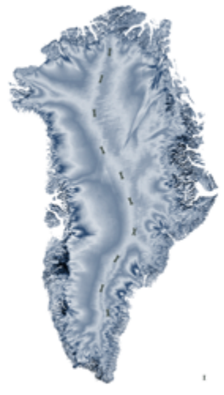
Ice core research has been conducted primarily on Greenland, moving seasonally in summer. It uses base camps to shift their locations to set the perfect place for scientific data with about ten people. The research method divides into two purposes: deep and shallow cores. Deep core drilling needs camps because researchers must drill a snow pit and ice cores repeatedly until it hits the bedrock, a maximum of two miles. These cores are used sectionally, including the ancient atmosphere and volcanic information. Otherwise, shallow ice cores are used for horizontal data. Shallow ice core drilling works with the grid system, about 160 ft. Researchers move their campsites by a grid to gather information about ice flow and chemical elements by a grid to understand glaciology.




## Ice Core Drilling Projects in Greenland

This project aims for semi-permanent research centers rather than temporal research centers before. The research center is located near the ice core drilling sites for similar climate conditions, and it moves through a particular path that follows the highest altitude of the Greenland ice sheet. Since scientists have to move around to collect different data from ice cores, the center works with five years of durability. Deep ice core drilling takes about four years, but shallow ice core drilling takes only one year. Hence, it requires four research fields to match durability with deep core drilling. After five years, parts of the building will be deconstructed except for the minimum structure, and it will turn into the visiting center and ice core museum.



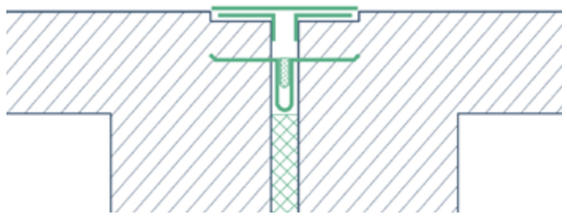
### X Shape for Reacting Climate Condition in Greenland

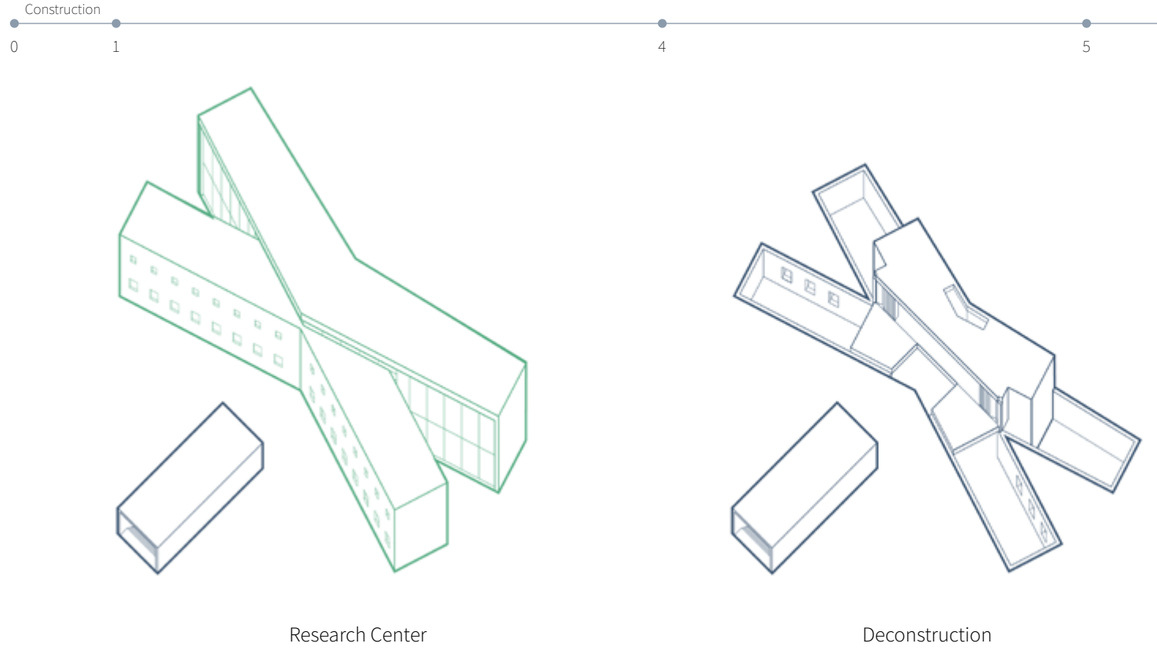
Research centers for ice core drilling have to locate, under specific conditions, ice velocity. Since ice accumulates through decades, the area with the lowest ice velocity contains the richest data. This building is shaped to react to the particular path of ice velocity and tilted through the angle, reacting with different climate conditions such as wind. The research center works for five years, deconstructed partly, and rebuilt in other sites for collecting further data.

## 5 years Durable Cycle

This project is for designing a prototype for research centers with a five years durable cycle. This project is for designing a prototype for research centers with a five years durable cycle. This project is for designing a prototype for research centers with a five years durable cycle. This project is for designing a prototype for research centers with a five years durable cycle. This project is for designing a prototype for research centers with a five years durable cycle. This project is for designing a prototype for research centers with a five years durable cycle. This project is for designing a prototype for research centers with a five years durable cycle.

Expansion Joint

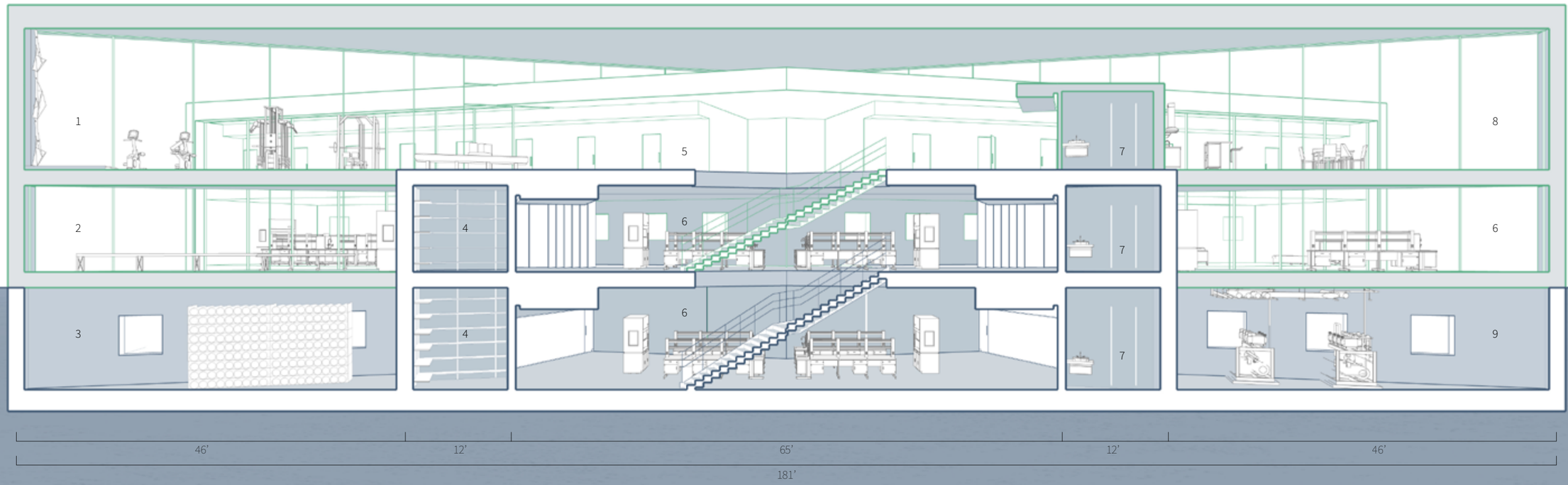





Research Center

Deconstruction

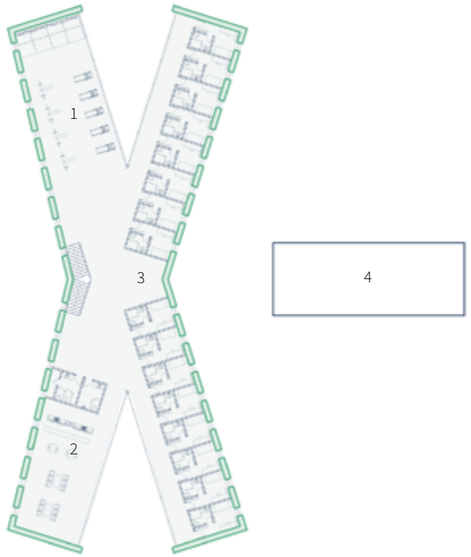
Renovation to Museum



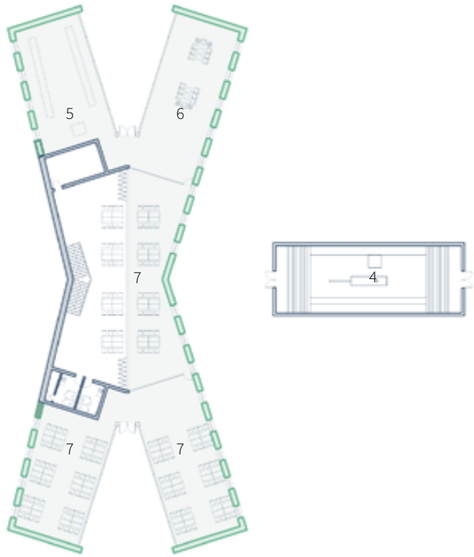

1 Gym
2 Core Processing
3 Ice Core Storage
4 Storage
5 Residence
6 Research Room
7 Bathroom
8 Kitchen
9 Machine Room

SCALE 1'-0 = 1/16"

Scale 1'-0 = 1/64"



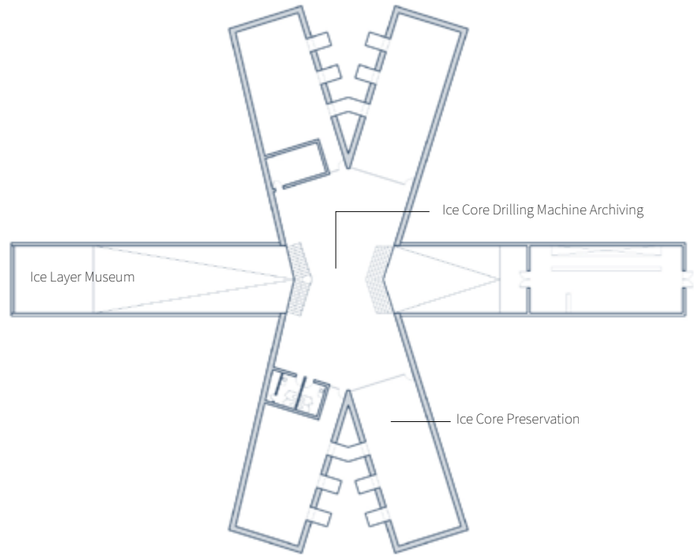

2F




1F


1 Gym
2 Kitchen
3 Residence
4 Core Drilling Camp
5 Core Processing
6 Community Room
7 Research Room
8 Ice Core Storage
9 Machine Room
10 Conference Room

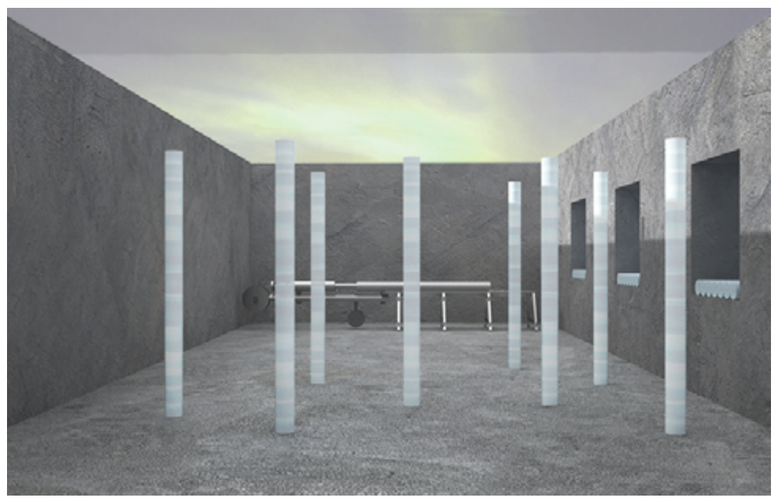
B1F



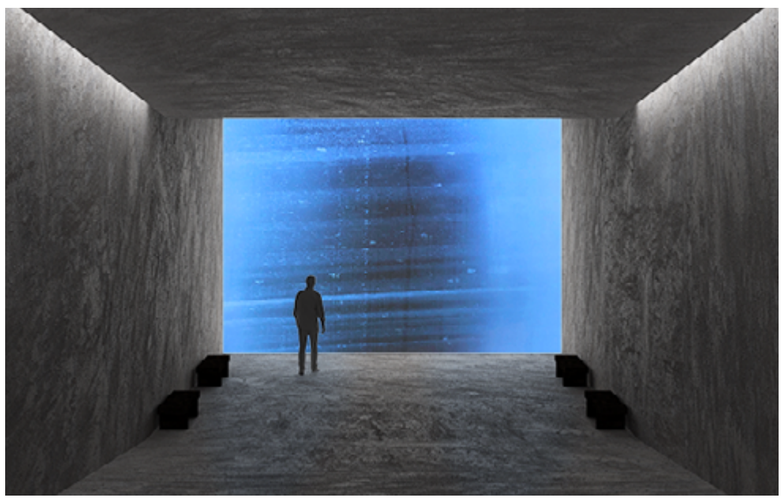

After Renovation to Museum

Ice Core Drilling Machine Archiving

Ice Core Preservation



Ice Layer Museum

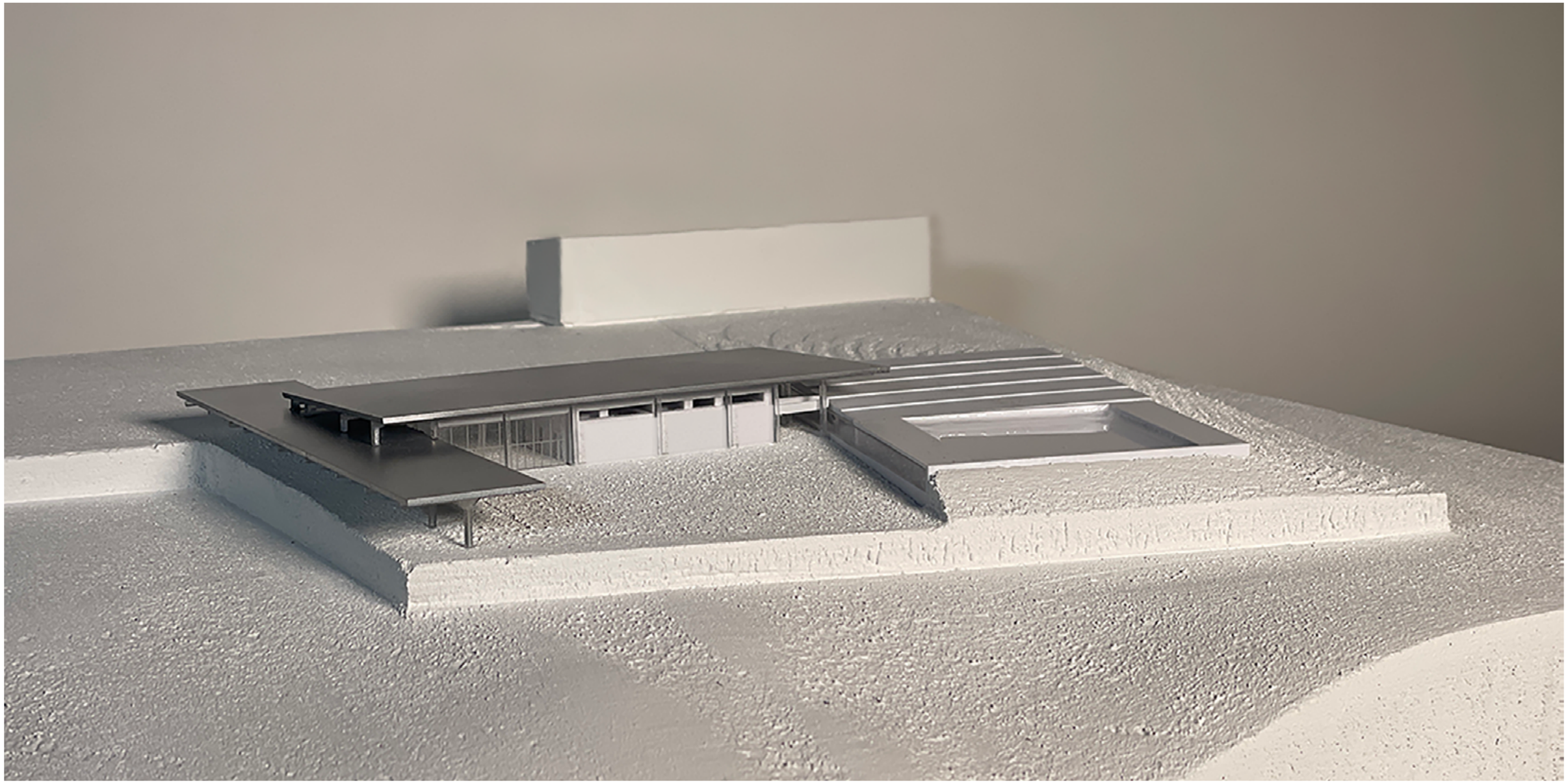


# 03

# Converting Hazard to Recreation

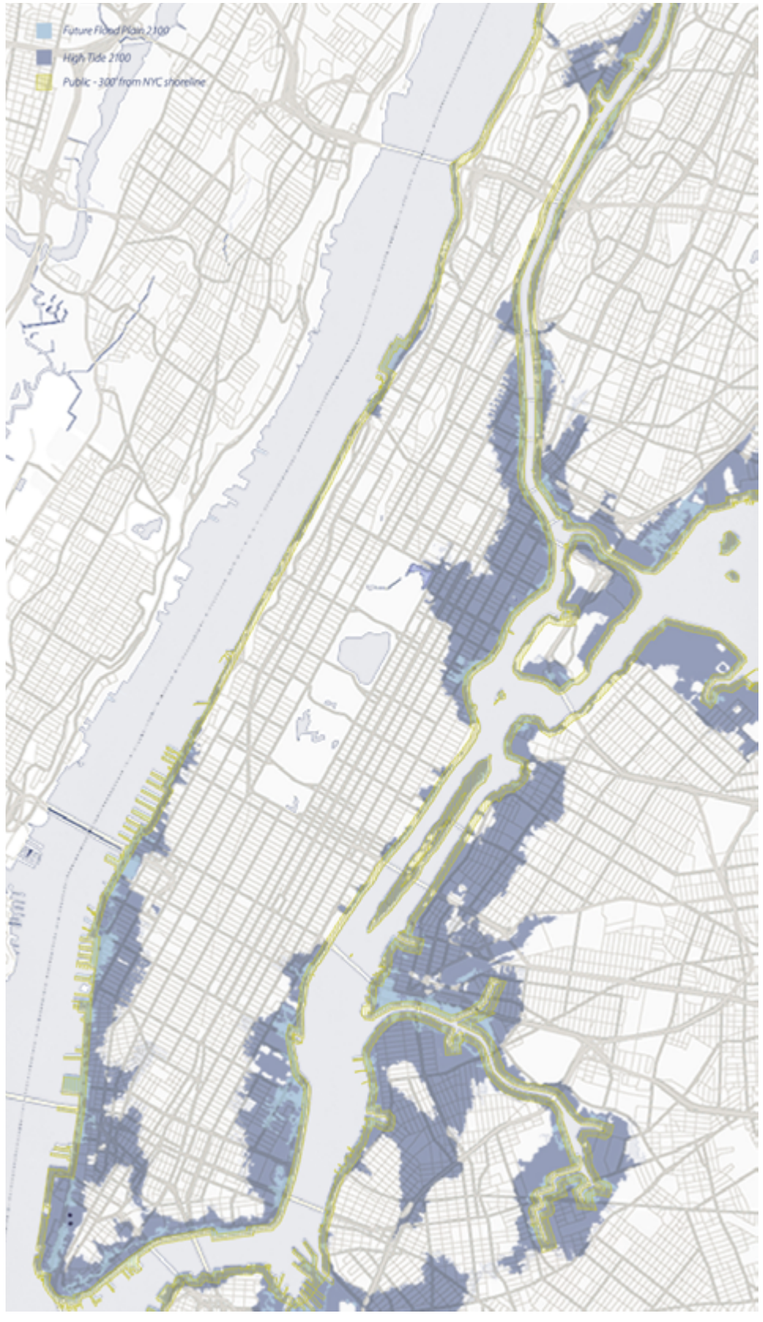
## : NYC 2100 Water Plan

Year : 2023
Location : New York, NY, USA
Type : Water Filtration Facility
Instructor : Laurie Hawkinson
Role : Individual Work



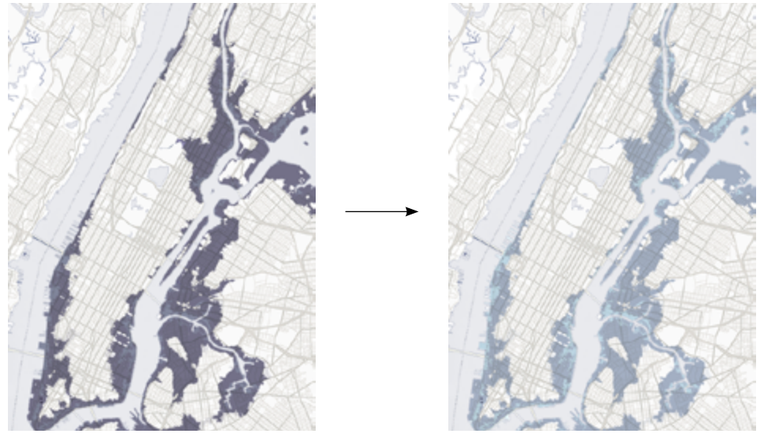
## NYC Flood MAP 2100 : Making 300 ft  from the Shoreline Public

New York City's shoreline areas are currently exposed to coastal flooding by warm-season tropical storms such as Hurricane Sandy. The map shows future flood plain and high tide levels in 2100, indicating that NYC's shoreline is highly risky for residents to keep living in the future. Hence, this project aims to convert 300 ft from the shoreline to a public area to protect civilians and provide a new lifestyle around the region.




## Filtering Runoff Water

Rain runoff water causes safety and environmental problems after a storm or flood. NYC's annual precipitation is about 974,824 gallons, but all the runoff water goes directly to the river, sweeping the whole city and causing river water contamination. Filtering this runoff water and turning it into recreational water can be helpful to solve the environmental problem and improve people's life quality after storms.



## Anable Basin, Long Island City

The project site, Anable Basin, is located in Long Island City. Since the site has a CSO(Combined Sewege Overflow) location, water drains through the contour level towards the cso location. This project installs a water filtration facility near the location to convert cso to recreational water.

## Soft Edge for Water Retention

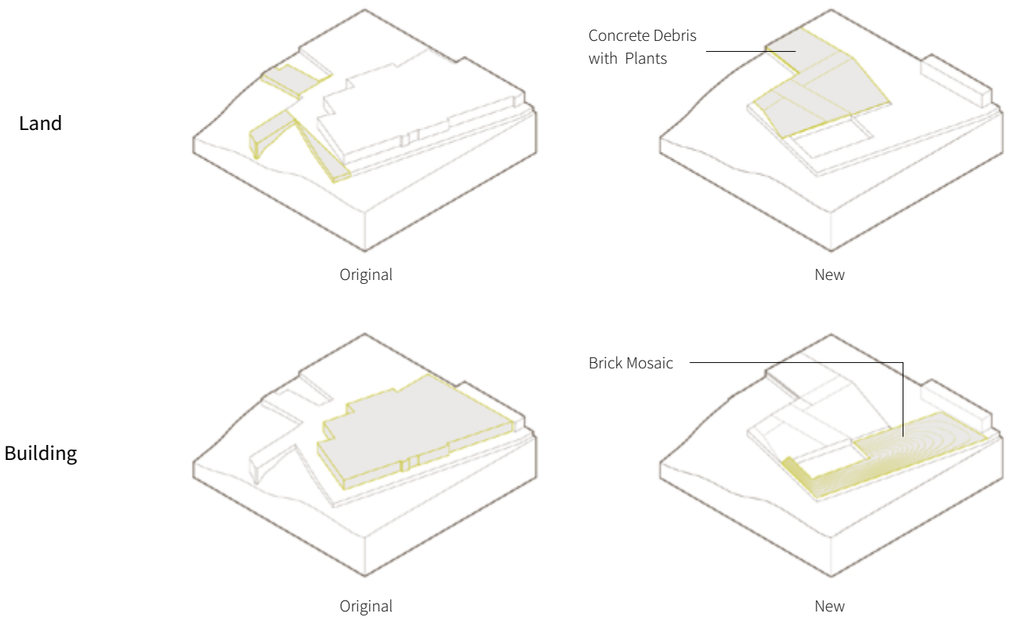
To make public water recreational area, water retention is necessary to retain water on the landscape. Hence, new topography has to be constructed on the site to make water direction and keep the water. This model is designed with terraced topography to capture runoff water, filling water in the pouch-like area on the ground, rather than flowing away. Moreover, it creates different levels to control water direction and provide people a playground.

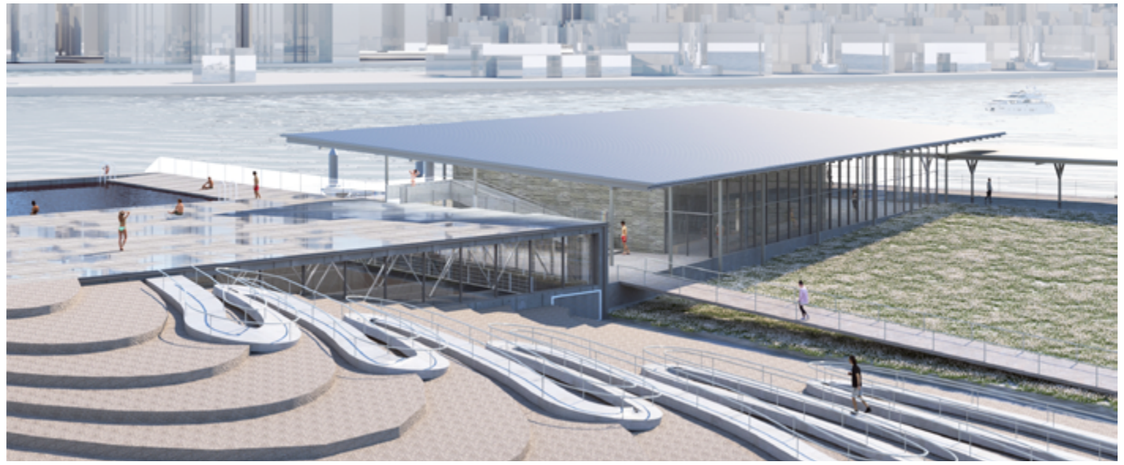
Models are developed sequently, following Sol Lewitt's instructions.

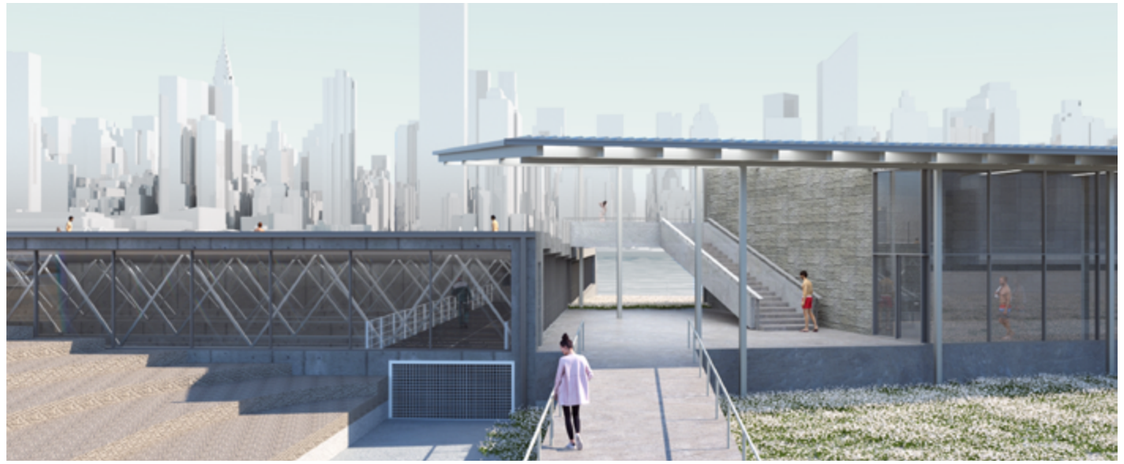
12" x 12" Form Study Models

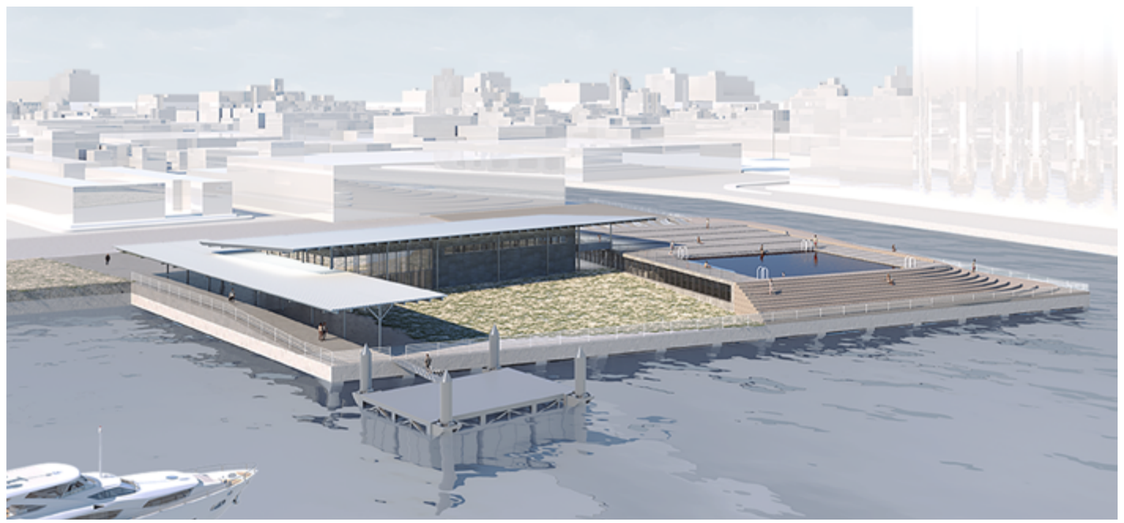
## Cut and Fill : Creating New Landscape

The topography is made by 'cut and fill method' since some of the existing part from the site has to be taken to build a new shoreline edge. In order to cover massive landfills for new landscapes, existing materials are converted to new landscape: A part of the original land is taken and grinded to build a landscape with concrete debris, and bricks from the original building in Anable Basin is going to be used for constructing mosaic flat surface and creating a soft edge.



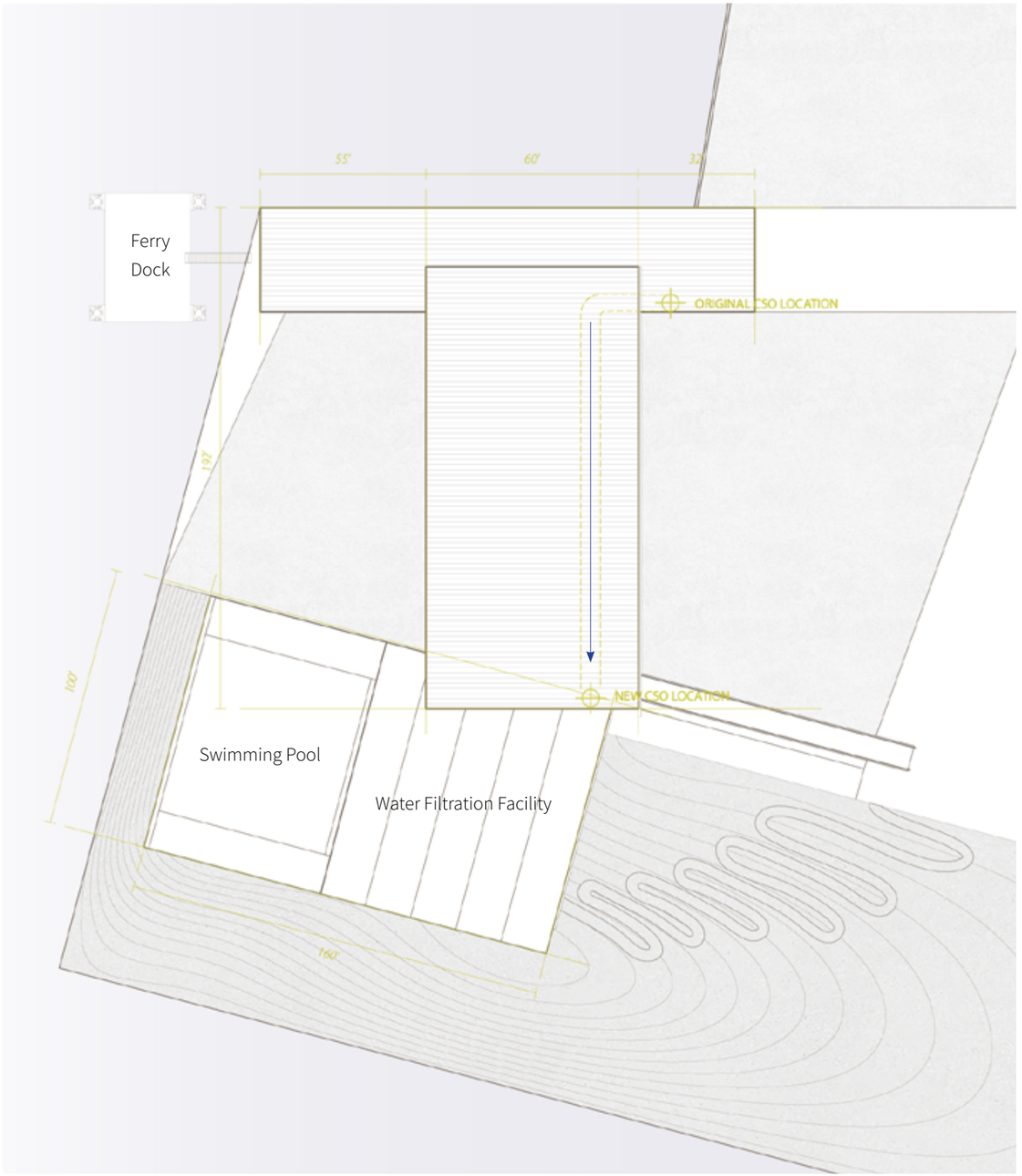







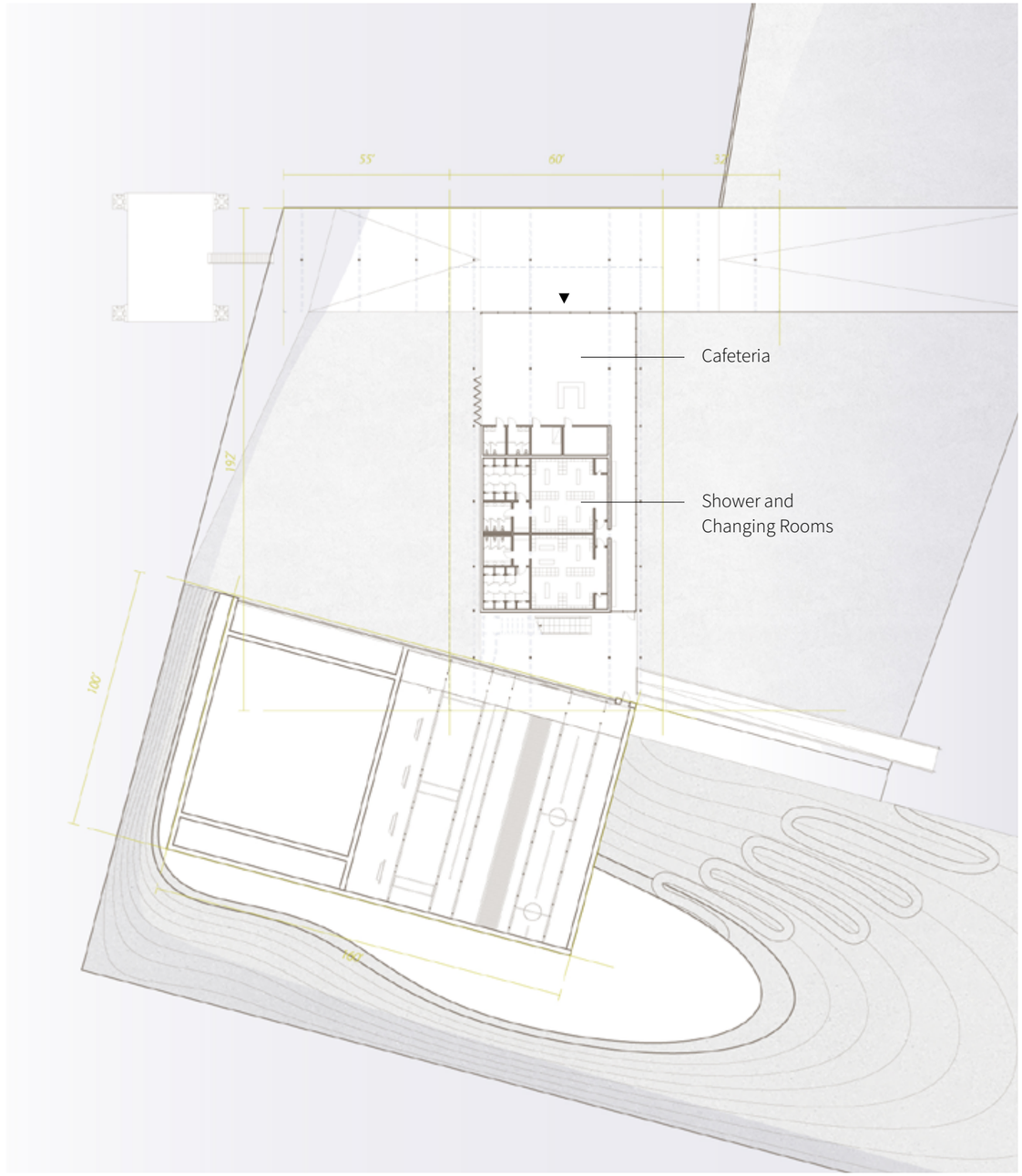
## Combining Water Filtration Facility and CSO

CSO location is changed by extending pipes to combine with runoff water. All combined water moves to the water filtration facility along the elevation created by new landscapes. After the water influx, it will be processed by the filtration facility, which can handle Long Island City's annual precipitation on average. Filtered water will be clean enough for people to dive in and eventually converted into recreational water when all process is finished.




## Public Water Recreational Area

Not only the swimming pool but also new landscapes will be  water recreational areas. People can access the building through various ramps, stairs and a ferry dock. watching water moving and draining. The whole site wil be either active or passive water recreational areas and people can see and learn the system. The building is for supporting programs such as cafeteria and shower rooms for the swimming pool.

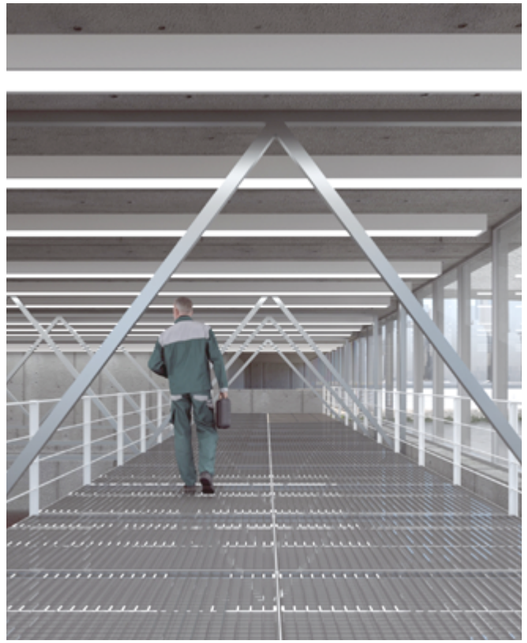


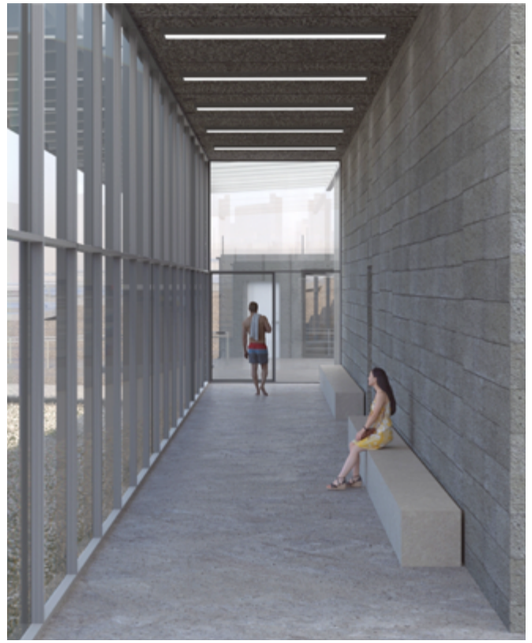
## Providing Recreational Water to Public

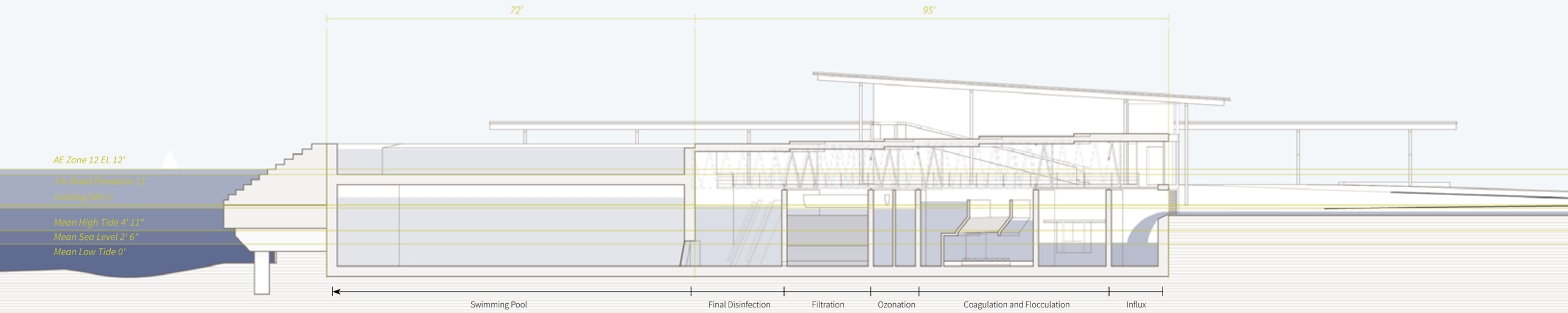
If the water fills to a certain level, it will flow naturally due to the pool's elevation difference and drain to the east river after usage. The edge is 11 ft high from the existing site to prevent flood hazards. Moreover, the swimming pool faces Manhattan's skyline, providing a beautiful view while playing with the water. People can play around the pool on the landscape with a soft edge attached to the pool. The pool is transformed into an ice rink for winter to enable annual use.

## Didactic Experience Sequence

People who are using the facility can see the whole process. The system is exposed so that they can learn how the water is filtered and eventually transfomed into the swim water. This didactic experiecne helps people to understand and notice environmental changes such as sea level rises or flood hazard.







# Construction Methodology

## 04 Tensile/Compression Surfaces

Building Science & Technology | AAD Fall

## 05 Rethinking BIM

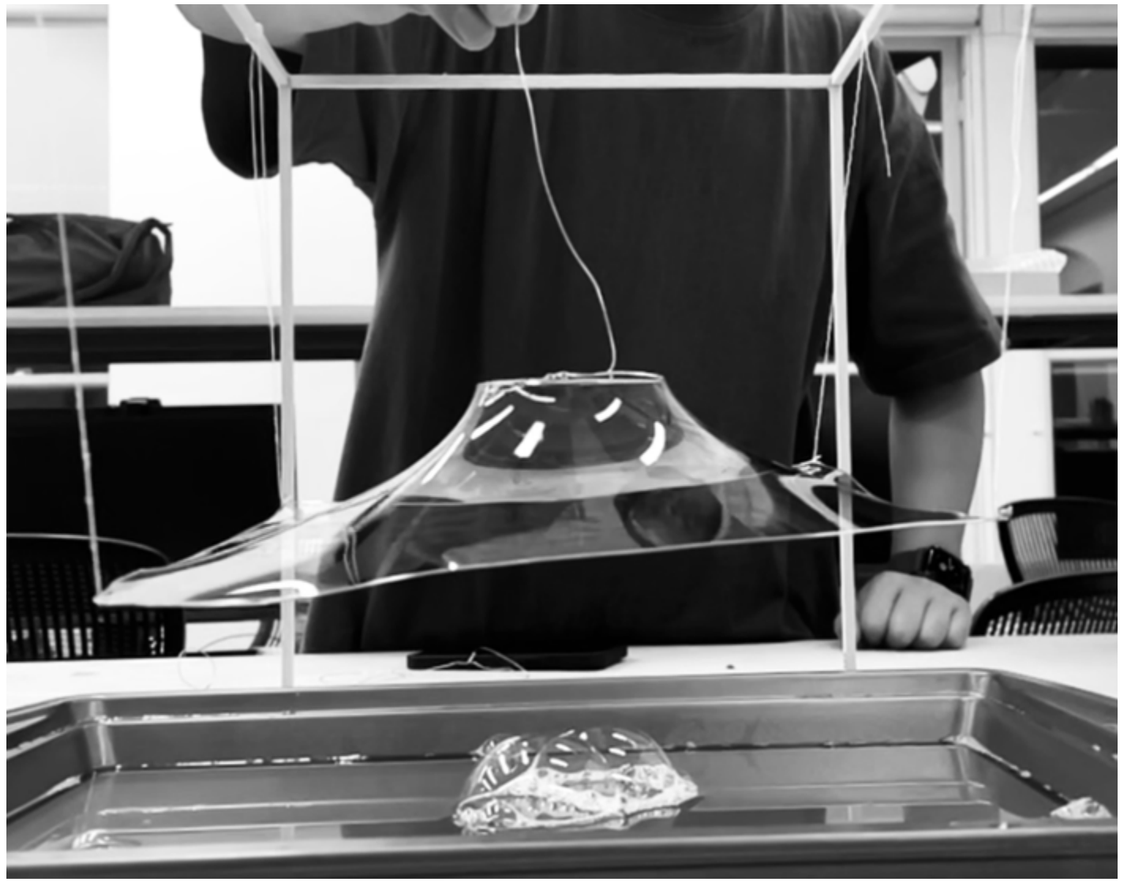
Building Science & Technology & Computational Design | AAD Spring

## 06 Seminar of Section

Visual Studies | AAD Spring

## 07 Techniques of the Ultrareal

Visual Studies | AAD Fall



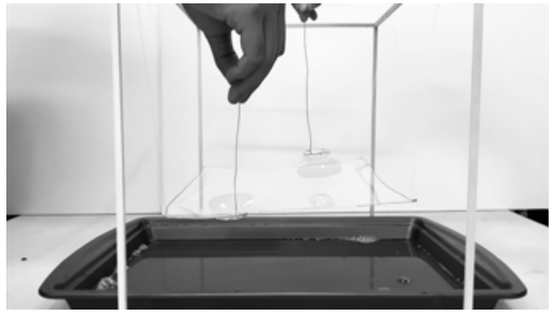
# 04

# Tensile/Compression Surfaces

Year : 2022
Instructor : Robert Marino
Role : Team work (2 members)

Frei Otto Bubble Experiments with Strings

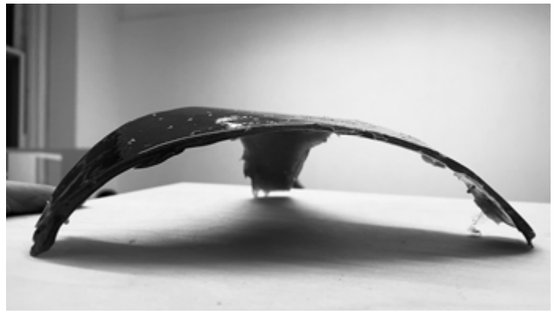
Frei Otto Bubble Experiments with Wires



Sugar Surface Experiments : Material Test

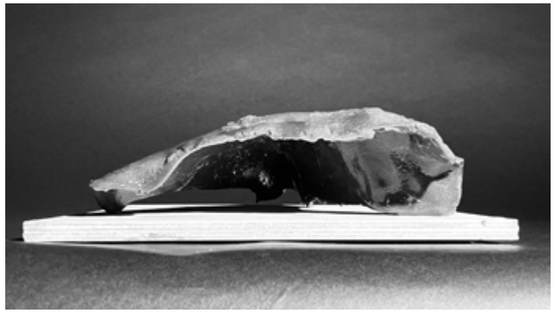
Sugar Tensile Surface 1

Sugar Compression Surface 1



Sugar Tensile Surface 2

Sugar Compression Surface 2



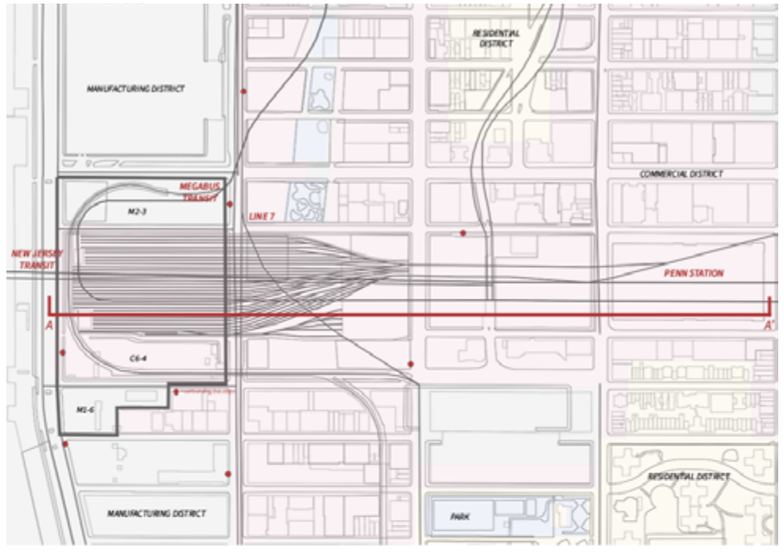
# 05

# Rethinking BIM

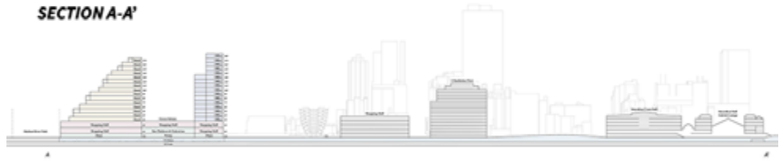
Year : 2023
Location : New York, NY, USA
Type : Mix-used Transit Hub
Instructor : Joseph Brennan
Role : Team work (4 members)

This project is about designing a pedestrian-friendly mixed-used transit hub in Hudson Yards by providing good daylight conditions using BIM. To achieve this, we made three openings on the ground floor to allow the sunlight to reach the underground base with train platforms and transit circulation. We tested solar fans in different rush hours in Grasshopper with a ladybug plugin and carved out the building mass, designed based on the Hudson Yards district zoning regulations. Facades are designed to maximize the sunlight reflection to redirect it to the underground platform. We angled the reflective curtain wall by calculating the average angle between the sunlight and reflected light vectors.

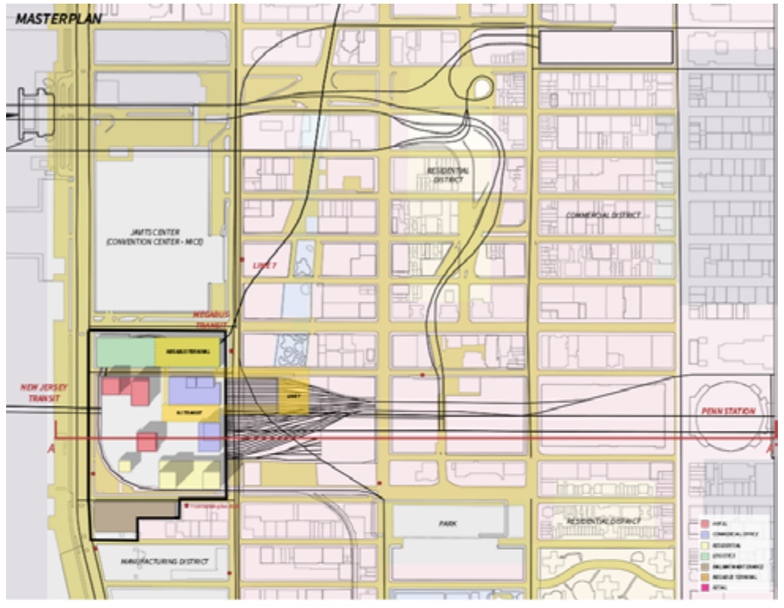
## Hudson Yards Transit Hub




**SECTION A-A'**

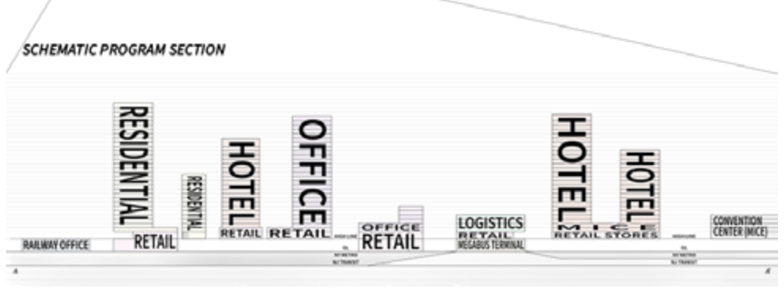


**CASE STUDIES**

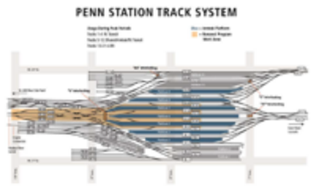



**SECTION A-A'**


**SCHEMATIC PROGRAM SECTION**




*CURRENT TRANSPORTATION SYSTEM*




*MASS DESIGN USING SOLAR ENVELOPE*



TRANSIT HUB
MAR - SEP AM 7-9, PM 3-7

MEGABUS TERMINAL
JUN - AUG AM 7-9, PM 4-6

TRAIN PLATFORM
MAR - SEP, PM 12-1

*SHADOW SIMULATION*

JUN - AUG, AM 7-9

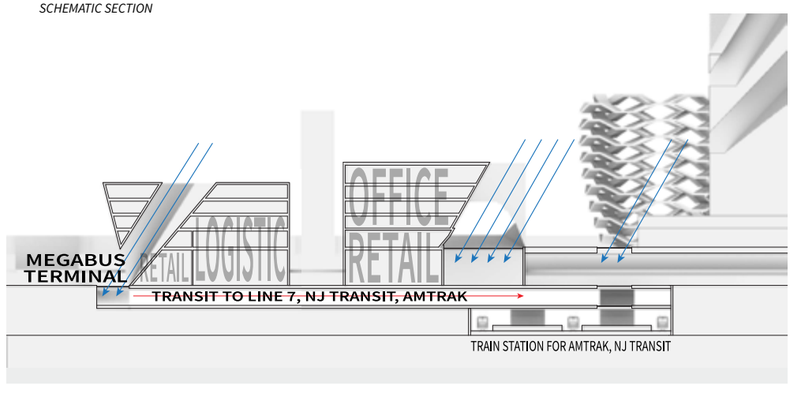
JUN - AUG, PM 4-6

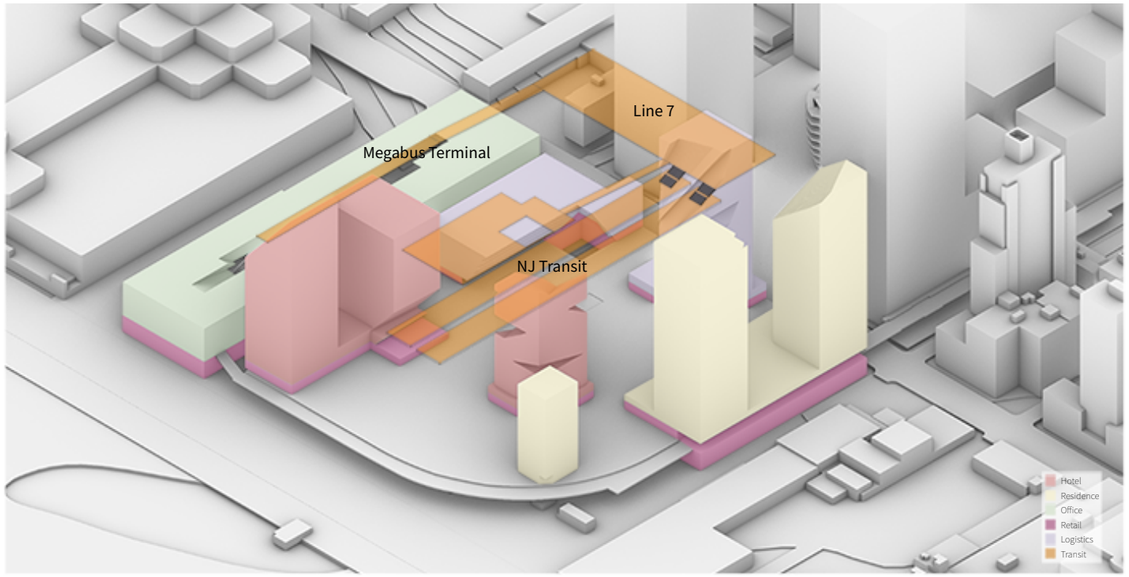
MAR - SEP, AM 7-9

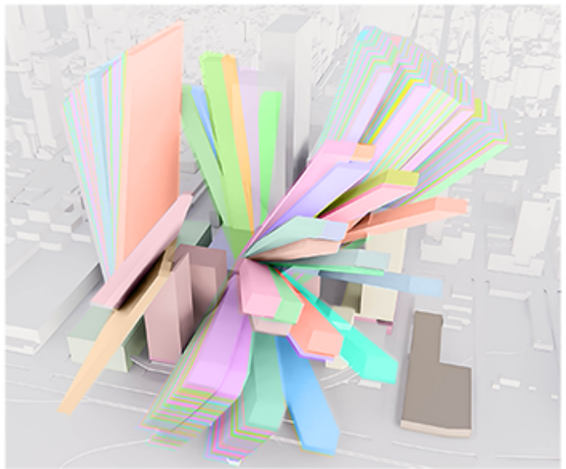
MAR - SEP, PM 3-7

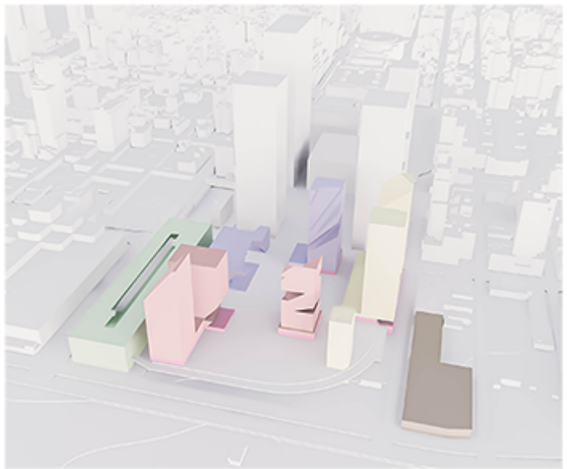
MAR - SEP, PM 12-1

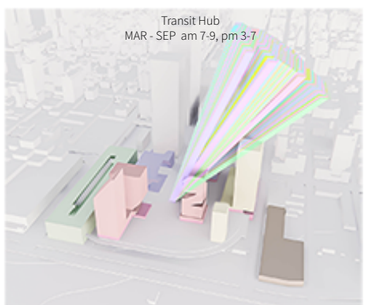
*SCHEMATIC SECTION*

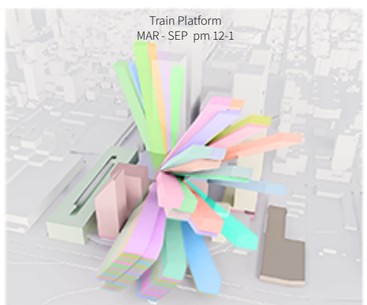


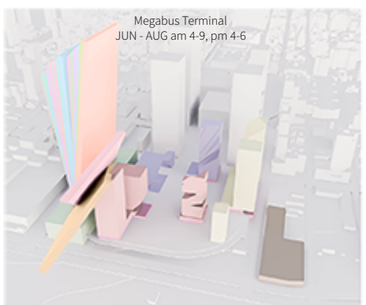

Line 7
Megabus Terminal
NJ Transit
Hotel
Residence
Office
Retail
Logistics
Transit

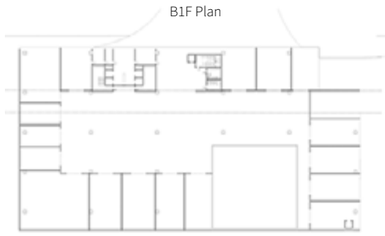


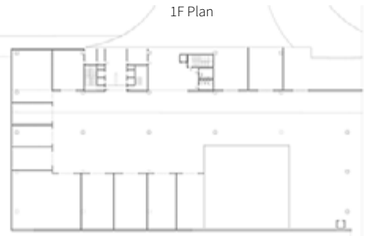



Transit Hub
MAR - SEP am 7-9, pm 3-7

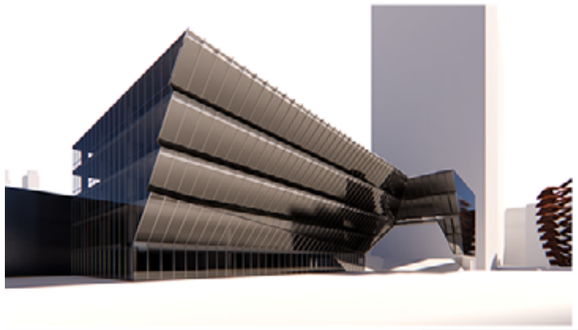

Train Platform
MAR - SEP pm 12-1

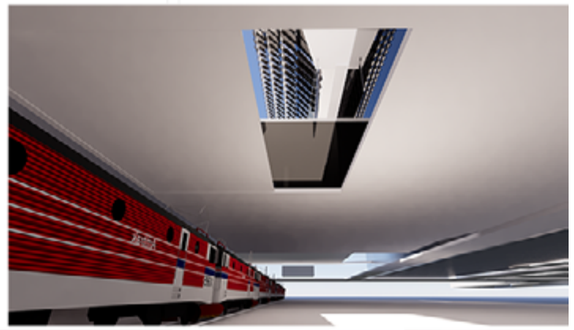

Megabus Terminal
JUN - AUG am 4-9, pm 4-6


B1F Plan


1F Plan


5F Plan



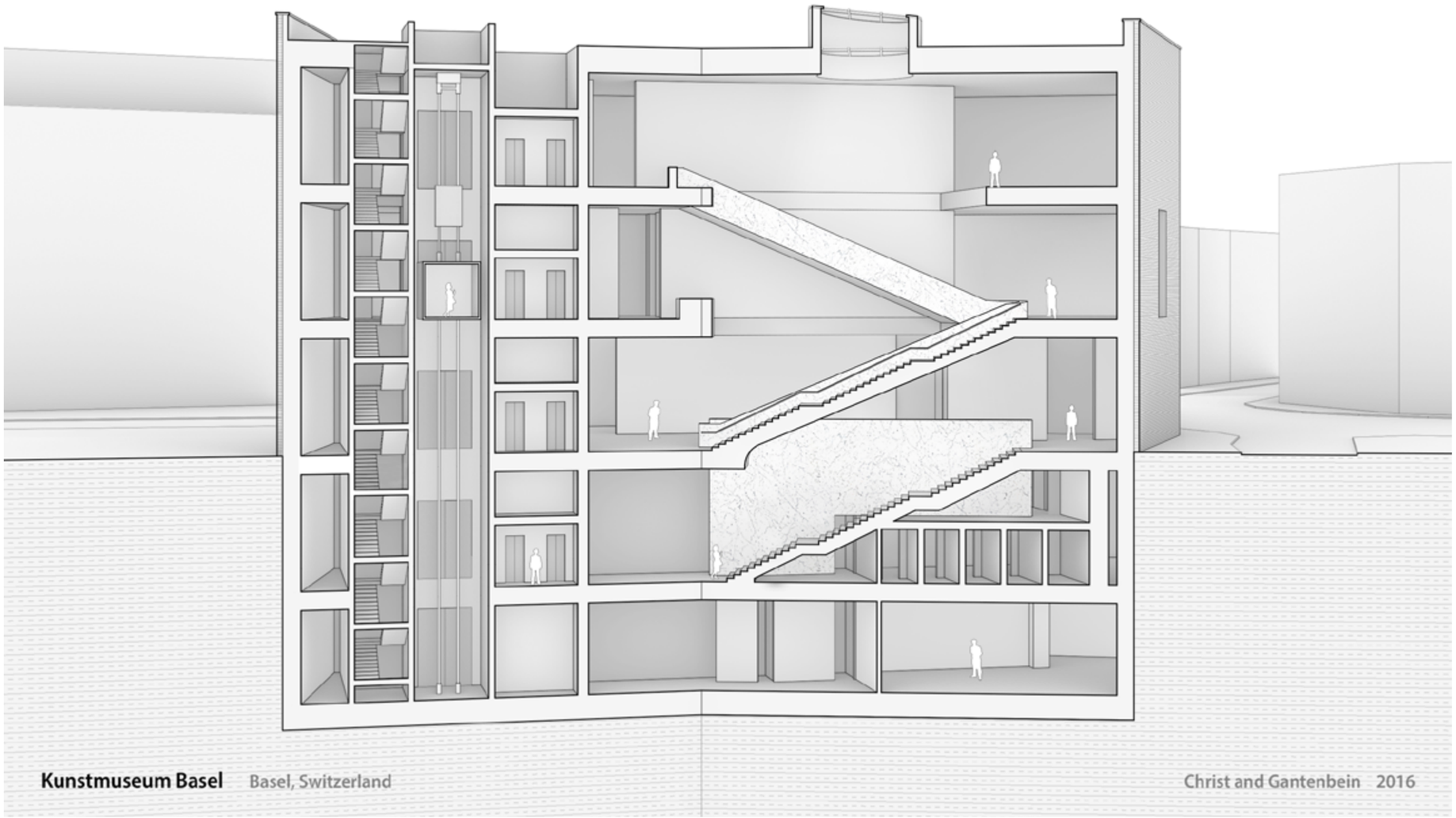



High Line Level
Ground Level
Platform Level

# 06

# Seminar of Section

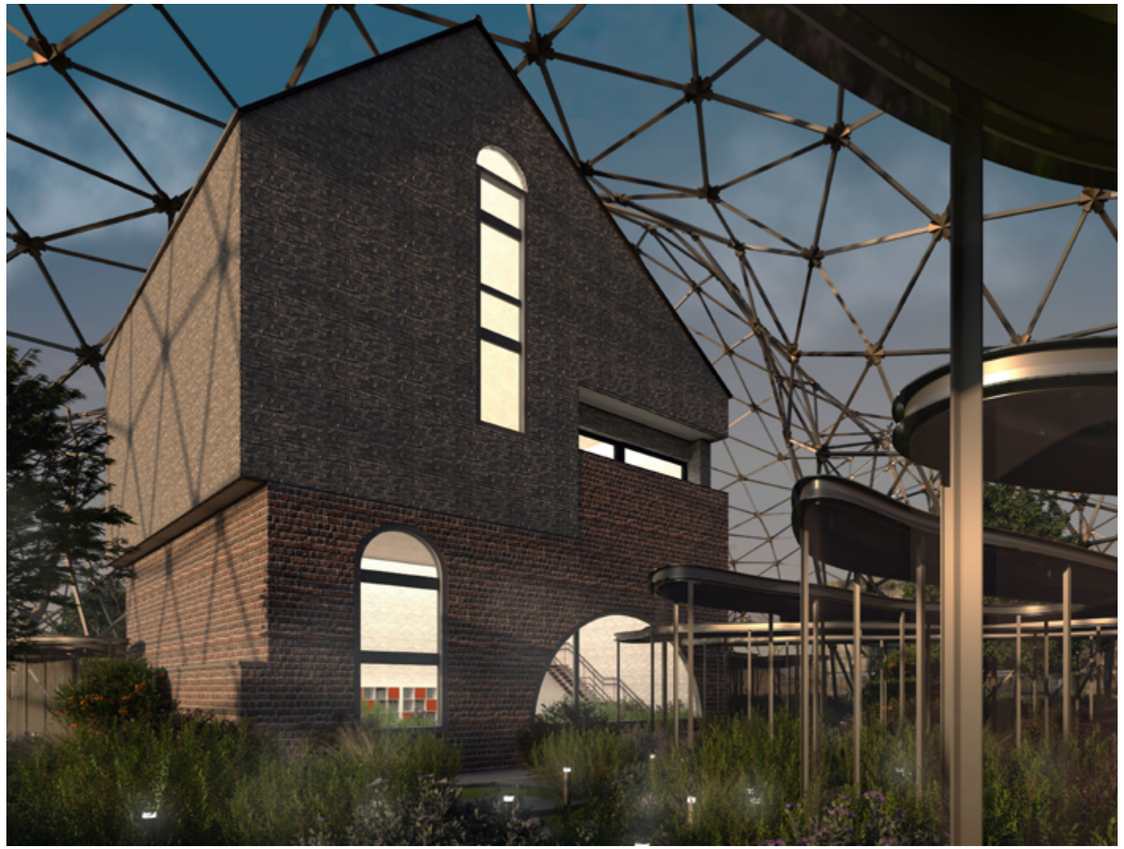
Year : 2023
Instructor : Mark Tsurumaki
Role : Individual Work



# 07

# Techniques of the Ultrareal

Year : 2022
Instructor : Phillip Crupi
Role : Team work (4 members)



# Measurement

## 08 Immeasurable Sites

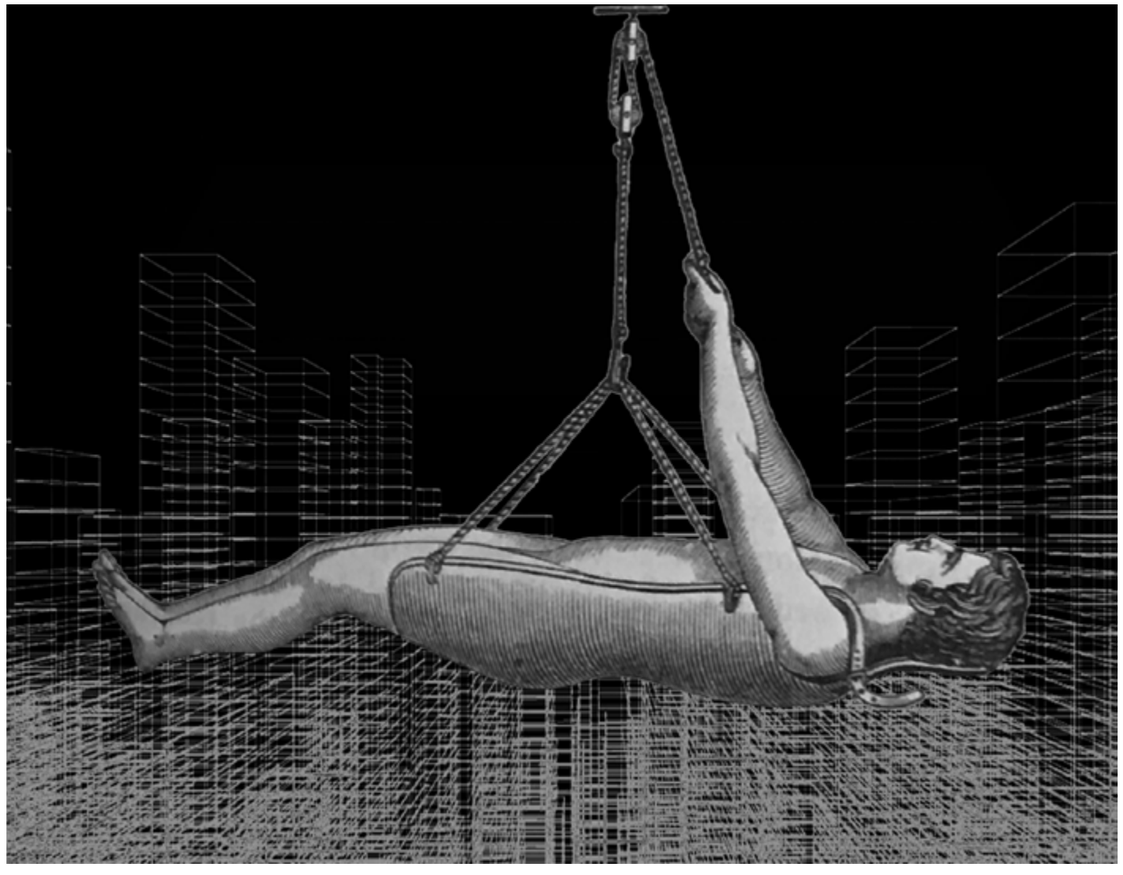
Urban Design Seminar | AAD Spring

## 09 Historty of Architecture Theory

History & Theory | AAD Fall

## 10 Transsclarities

AAD Required | AAD Summer



# 08

# Immeasurable Sites

Year : 2023
Instructor : Emanuel Admassu

## Measuring and Traveling


## Un[Ctrl]able : Bruther X Pierre Huyghe

[New Generation of Research Center] X [After ALife Ahead]

[Residence of Researchers] X [A Forest of Lines]

# 09

# The History of Architecture Theory

Year : 2022
Instructor : Mark Wigley

## Louis Kahn's the Originality of Architecture

*History of Theory Midterm Paper*
*GSAPP AAD 23 Gyeom Chung*

Louis Kahn is a pioneer of post-modern architecture and one of the leading second-generation architects who showed the essence of architecture beyond time and region. The internationalism style, which sought to remove the material that dominated the world simultaneously and to pursue an infinite and expanding abstract form of beauty, is cut off from the past and instead loses the critical characteristics of architecture called a *memorial*. However, what was important to Kahn was the concern about the 'originality of architecture.' It discovered the meaning of the time and created an infinite series of implications beyond the times. Therefore, he reinterpreted the past rejected by modernism in a modern way and tried to embody the essence of modern architecture in architecture through ideas such as silence, light, source, order, form, will to exist, and room.

It is noteworthy that in this process, Kahn recognized the boundaries between what is changing, what is not, and what is changing for what is not. This paper will focus on Kahn's 'silence and light' idea. Louis Kahn said, "Inspiration is to feel the 'start' on the boundary between silence and light. In other words, it is silence with a desire for existence and light, the donor of all beings. This exists inside all living things. " The purpose of this study is to compare and analyze Louis Kahn's silence and light with sublime to get his work's existential meaning and examine the architectural implementation.

Louis Kahn mentioned the relationship between light and Statements on Architecture, which he gave at Politecnico in Milan in 1967. He used the term 'four silence' to express the desire for existence in architecture. He interpreted silence as



an emotion, not a situational meaning of 'quiet.' Silence is regarded as the source of all living things with the potential of life force, the space where life was born. In other words, silence is neither light nor darkness, but a desire to exist somewhere deep in all living things. In addition, he tried to explain vitality by linking silence with light. Silence is raw and immaterial, with a desire to express, and light has no conscious purpose, so it is considered a potential to materialize something, although it is not defined. In 1967, Kahn mentioned the idea of silence, light, and boundaries, which had a generative value of "start." Later, in 1972, he emphasized the importance of the "start" from silence to light, referring to the "four brothers" of silence and light that he thought of separately.

In conclusion, silence and light can be interpreted as the desire to exist and express, meeting what is possible to create something. Silence and light do not exist separately but can be interpreted as a creative moment, expressing the human desire to convey through the process of creation.

Kahn's idea of "silence and light" stems from his awe of light. He traveled to Greece, Rome, and Egypt in the 1950s, experiencing awe-inspiring light as he encountered the Parthenon, the Pantheon, and the pyramids. Through this, he realized the inspiration of light, and it became an opportunity to introduce light into his architecture actively. Kahn said the following about the relationship between light realization and admiration.

*"Realization comes with a sense of admiration. Realization comes from intuition. Some things have to exist that way, and even though you can't see them, they have one limited existence. You crave because being makes you think about what you want to express. You distinguish between existence and presence in your mind toward expression. When you give existence to something, you should consult nature. ...*



*Design takes all the elements from the 'existence' of the elements in mind to the 'existence' of the elements that can be touched by hands and gives them shape."*

Light is a tool that expresses the existence that realizes something. Therefore, it was defined as 'realization comes with a sense of admiration' and mentioned that light and admiration are inevitably connected. For Kahn, the light was viewed as a sacred light, a factor that gave life to architecture. Therefore, light has vitality and meets architecture and causes admiration.

Kahn considered that light changes with time, weather, and season. Through this ever-changing natural light, architecture was constantly changing, and this gave life to architecture. Therefore, Kahn saw that space without natural light was not a genuine space. In other words, the amorphousness of light gives life to architecture and causes feelings of admiration.

Kahn used his own language to express architectural ideas. It is used as a research method to analyze the writings he left and put them into his work. In addition, the scope of the work analysis was limited to public buildings that could best reveal the sublime concept among buildings built after the 1950s when his ideas were organized. The classification of structure, material, and size introduced in this process consisted of elements related to the medium of expressing the non-deterministic moment, which can be commonly grasped in the method of inducing the sublime of Louis Kahn.

For Louis Kahn, the structure is inseparable from light. He can find this in that he mentions that architectural elements such as pillars, arches, domes, and bolts are structures related to the nature of light.



*"Structure is a design in light. Bolts, domes, arches, and columns are structures related to the nature of light."*

In this context, the structure is an element that creates a repetition of the presence, absence of light, and the light covered by the structure that forms a shadow in the building and allows you to feel the rhythm of light. He understood that the structure is between the pillars and the wall's opening as a structure representing light. At this time, natural light captures moments that cannot be directed by changing with the passage of time or the change of seasons. This is the unpredictability of natural light, which has a permanently changing property, is considered to have vitality. In other words, the architectural structure represents light and darkness, revealing the existence of light and dark. This reinforces the non-crystallinity of light and captures the time mentioned as a universal value in architecture. In fact, these Kahn's considerations can be found in his architecture.

The 1st Unitarian Church and Bryn Mawr Dormitory are introducing natural light similarly. At this time, light flows through the side window, passes through the ceiling structure, and enters the room with contrast. The choice of structure makes the choice of light and creates an atmosphere of space. This can also be easily found in the Philip Exeter Library. Natural light flows in from the side window on the upper side of the library, contrasting light and shadow in the voided inner center hall.

Kahn used a barrel bolt structure to introduce light at the Kimbell Museum of Art, where natural light flows directly through a long torn opening along the bolt. The light introduced in this way is evenly distributed indoors by a perforated metal reflection device installed 10 feet long under the opening. This introduced light separates the boundaries of the structure and shows how light builds space.



Kahn's idea of a combination of structure and light is shown in more detail at the National Capital of Bangladesh, which he left last. The huge hall in the center uses natural light as a lighting, and light flows from the roof of the hall in various ways. At this time, light transformed by a huge beam on the ceiling just before entering the room. In the National Capital of Bangladesh building, the connection between light and structure is controlled not only through the roof but also through the opening of the wall. The circular opening on the heavy and expansive wall of the prayer house maximizes the contrast between light and shadow.

In summary, Kahn thought of light and structure as an organic relationship, and natural light entering space creates shadows by structure, contrasting darkness and brightness. Through this, natural light in space maximizes its vitality and reveals its existence. In other words, the light entering the choice of structure forms a shadow and makes us grasp the existence of time. Through this, the non-deterministic nature of natural light that changes infinitely is captured in space, capturing the vitality of architecture that is created infinitely. In conclusion, the structure is in line with the feeling of sublime through the experience of the event, which causes admiration by exposing the existence of light to the observer and allowing him to experience time.

Louis Kahn tried to understand the building materials by asking and answering bricks, "What do you want to be?" At that time, architecture was separated from the construction process by the industrial revolution, and internationalism style was prevalent, such as removing the physical properties of materials. But Kahn had a respect for past building materials from nature, and he thinks that materials are built with human creative consciousness.

Kahn thought light plays an important role in respecting the properties of materials. Light is a tool of realization, and the desire to "be something" is intended



to build "materials" into buildings through light, a means of silence. Therefore, light is used as an important factor in selecting materials.

Light, the donor of existence, discovers the essence of the material and is impressed by it. In other words, the compartment exposes the material to pay attention to the texture, not the existing legend method, so that it can meet the light and reveal the essence of the material more strongly. This is similar to the meaning of Neo-Brutalism in the modern architectural movement, and Kahn chose a method of representing materials in an instant. The exposed material captures the properties of light, just as the essence is revealed by light.

The wonders of natural light come from the colors of light that change over time. This is reflected in the material to create an atmosphere of space, and every moment it exists in a different shape. The non-crystalline light applied different colors to the material every moment and placed meaning on making space new. Therefore, Kahn tried to incorporate the vitality of light into the building through the exposure of materials.

Kahn valued the will of bricks and concrete to exist. These characteristics can be found in the First Unitarian Church and the Phillips Exeter Library. Both buildings are composed of red brick exterior facades, and the interior is formed of concrete and concrete blocks. The Philips Exeter Library is similar in the use of the first Unitarian Church plane and materials. Both spaces can be largely divided into two stacks. The thread facing the outer wall is a space for people's activities, and the light entering through the outer red brick creates a cozy and attractive atmosphere due to the warm-colored material. On the other hand, concrete and light meet in the center space inside, and sacred blue light in the First Unitarian Church meets concrete and wood in the Phillips Exeter Library, creating a majestic but warm atmosphere.



Regarding the color of light, Kahn had an opportunity to solidify his idea through the Design of the Salk Institute. He is advised to make a "Façade to the Four Sky" by Luis Barragán and leaves the court. The empty courtyard extends to the sky and sea, capturing only the changing color and time of light, not the atmosphere of trees, grass, and fountains. In addition, the Salk Institute is made of exposed concrete, teak wood in windows, and glass. The compartment left various traces of the construction process of exposed concrete and revealed it as it is, and as a result, it meets light and shows the essence of the material stronger.

Kahn showed the relationship between light and material in more detail through the Kimbell Museum of Art. The Kimbell Museum of Art is a simple but rich building that best utilizes natural light. This abundance stems from Kahn's respect for the use of materials. This building consists of concrete structures, calcification on the walls, and oak on the floor, revealing the materials that make up the construction. Inside the building, natural light enters through the long ceiling and is reflected by the inner membrane, creating a silver light. Natural light creates a different silver light every moment on the exposed material, giving the space a sense of vitality.

In summary, Kahn reveals the material's essence through the material's immediate physical properties and combines it with light to create an atmosphere of space. That is, the exposed material meets the color of light and allows you to experience a different space at every moment. Ultimately, Kahn's thoughts and expressions to find the essence of the material through light exposed the immediate physical properties of the material, that is, defects in the construction process or defects in the material. The amorphous characteristics of the exposed material contain values similar to the eventuality of the sublime.



Louis Kahn considered light to be a mediating factor for the experience. This idea is more pronounced by the relativity of space in his architecture.

The size of space is the beginning of a kind of "self-expansion" and is experienced differently depending on the space's size, height, and nature. Therefore, it is said that Kahn understood the empirical meaning of the relative size of space and strengthened it through natural light. The desire to express space was high and created an overwhelming wide space, and the size of the space became a means of expressing the desire to be mentioned as 'silence'. Also, as Kahn talked about his office, he said, "I think the large, high ceiling is undoubtedly a good place to inspire by the overflow of natural light in the room," meaning he is aware of the relationship between light and space size. The amount of light entering the space according to the relative size is all different. Therefore, it allows people to experience space, and light sensibly reinforces this experience. Kahn establishes the hierarchy of space through the size of light and space in the First Unitarian Church. The chapel, which is the center of the building, is higher than the surrounding room and it can be seen that much light flows in. On the other hand, the surrounding space is low, and relatively little light comes in, and the space is prepared. This construction method can also be found in the Bryn Mawr dormitory.

In this research, the following conclusions could be reached by examining the similarities between existentialism and the idea of 'superiority' at its core and Louis Kahn's 'silence and light.' Kahn tried to explore the nature of architectural existence through the process of creation called 'silence and light'. This is a sublime process in the sense of existentialism, and through this, it was possible to restore the 'monument' of the lost architecture successfully. In short, Kahn's architectural ideas of "silence and light" were very similar to the sublime of modern art to express the fact that something cannot be expressed. Moreover, Kahn successfully realized



the vitality of architecture by revealing what is impossible to recognize through light beyond metaphysical ideas.

In summary, Louis Kahn's idea, similar to 'superiority' in the existential sense, begins with the introduction of light, a tool of silence and expression, which is structure-existence, exposed material-essence, relative size-space sensory experience. In other words, Kahn expressed the architectural idea of 'silence and light' in this way. These three characteristics are summarized as follows. First, Louis Kahn identified light and structure as an organic relationship, and structure is a component that makes shadows and reveals its existence by comparing light and darkness. This is in line with feeling the feeling of the sublime through the experience of events, revealing the existence of light through structure and causing admiration by experiencing time. Second, Kahn wanted to find the essence inherent in the material through light, which was realized by revealing the material's immediate physical properties, a characteristic of Neo-Brutalism. In this process, he exposed and expressed the defects of the construction process or material, and these exposed materials combine with the color of light with non-crystallinity to experience a different space every moment. Therefore, light captures the flow of time and season in materials, and people are amazed by this moment. Ultimately, by revealing the essence of the material, it causes 'four emotions to rise.' Finally, light maximizes the sensory experience of space in the relative size of space.

Kahn considered light to be a mediating factor for the experience. The size of the space with relativity adjusts the amount of light, causing a sensory experience of the space. In other words, the relative change in space size according to movement encounters an unexpected space and experiences expansion of the self through this. This is similar to the word 'raising the emotion of sublime,' and it can be confirmed that the relative size of space ultimately causes the sublime.



In conclusion, Kahn's silence and light can be said to awaken human creativity, that is, to stimulate human creative free will. It was implemented architecturally through structure, material, and size through the medium of light. In other words, like avant-garde artists who wanted to express the existence of something that could not be expressed, he tried to find the essence of architecture by capturing time that could not be captured by changing light forever. Furthermore, Louis Kahn's ideas and architectural implementation are not individualistic expressions but the result of Louis Kahn's expression of creative free will in the humanistic sense of modern existentialism. Therefore, exploring existentialist ideas and the only artistic sensitivity that characterizes modernity will help enhance Louis Kahn's understanding of ideas and works.

# 10

# Transsclarities : Arenas of Design

Year : 2022
Instructor : Andres Jaque

## Non-Damaging Architecture

Gyeom Chung

There are complicated and various values that architects have to consider, so it easily happens for architects to miss some significant value when they are trying to improve something. They sometimes demolish dwellings in order to improve the quality of buildings and streets or sometimes ignore minority people to follow a great cause. However, architects should care about people's daily lives rather than focusing on a great cause and ignoring them.

The transformation of 530 logements at the Grand Parc Bordeaux is a 1960s residential complex with three tall towers. The three architectural firms transformed the flats: Lacaton & Vassal architects, Frédéric Druot Architecture, and Christophe Hutin Architecture. The three architecture firms focused on avoiding residents' inconvenience to protect their residence rights. They also radically upgraded the spaces and services technically while keeping the expenses of the building works to a minimum, so it was unnecessary to increase the tenants' rent. They added winter balconies and conservatories that worked as a bioclimatic system to become a passive system, enhancing the amount of natural light each residence receives. The winter gardens and balconies provide inviting outdoor areas that can be used to their full potential: 12 feet deep on the building's south façade, which is on a human scale.

[Image 1]

[Image 2]

Standard trucks supplied the conservatories and balconies during the reconstruction's initial phase so that the construction process schedule could be shorter. Only after that did the adaptation of the buildings' existing structure proceed, removing the old windows and creating fresh openings in the façade. The heavy usage of prefabricated modules allowed quick assembly and cost-effectiveness, enabling them to keep tenants in their homes during reconstruction.

Due to its height and flat geography, residents can observe a panoramic and distinctive perspective from inside, reflecting its surroundings' territorial qualities. Large glass sliding doors, installed in place of the windows, enhanced residents' quality of life while maintaining the buildings' original form. The foundation of the project's overall economy is the decision to alter the existing building without making necessary changes to the structure or floors and instead move forward with expansions and extensions. With this economic strategy, it is possible to focus resources on large additions, which are, in our opinion, the key to significantly and sustainably increasing the quality and size of the houses.

This project was a part of government reinvestment projects, demonstrating how the clients can reorganize high-rise buildings with low rents to meet social needs. It means the social trend no longer allows breaking existing values down easily without trying to maintain them. Demolition means not only destroying buildings but also damaging residents' daily lives, which could be a consequence of neglecting their rights while renovating, even for good reasons. The urgent values change depending on the era; hence, thorough consideration of values is crucial.

[Image 3]



## Vulnerable Isolated Wonderland

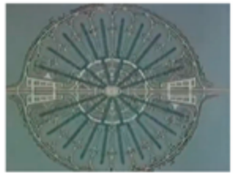
- Focusing on EPCOT -

Gyeom Chung

Walt Disney created the unfinished planned community idea known as the Experimental Prototype Community of Tomorrow(EPCOT) in the 1960s. As a radical form of a metropolis, he wanted to establish something completely new instead of creating another Disneyland: a neighborhood where residents would live as well as play. The main goal of EPCOT was to create a functioning city that was almost entirely self-sufficient, so residents could work and live there while still having access to all of their needs without needing a car. However, the original concept of EPCOT was impractical which led to its failure.

The primary challenge with managing the city was building a single united circulation system in a broader range to enable residents to move freely. The comprehensive master plan that Disney created was the shape of a radial plan, spreading from a central hub to outwards. The city has four layers: the Greenbelt, commercial and business districts, neighborhoods, and residential regions. This city concept is distinct from the center-concentrated plan of modern cities; it is a low-density city with highways and villages scattered like a theme park which is ineffective and difficult to embody as a one complete radial circulation system.

Disney devised two main ways of moving around the city: Monorails and PeopleMovers. PeopleMovers were quick, continuously moving trams, whereas Monorails were smooth, single-rail trains. Both modes seemed to be ideal transportation methods run by electricity and elevated, removing the need for fossil fuels with the associated pollution, fuel reliance, and traffic and road congestion issues. Roads were maintained apart from the walking trails, although EPCOT residents could still own automobiles. He designed a transportation lobby with three levels—the top for Monorails and PeopleMovers, the second for cars, and the bottom for trucks and shipping—for the Central Hub. It was a utopian way to solve problems, including traffic jams and car accidents, but actually, it made the circulation system more vulnerable and malfunctioned due to its independence.



This transportation system symbolizes EPCOT's infeasibility since Disney tried to control the entire city, even for small details. The city's outward roads are all connected and work as a wheel; every resident should work and live within the boundary, completely self-sufficient. The system is too easy to collapse because it does not have any supporting or correlated system from outside. Moreover, the original design was for pedestrian-friendly roads, which also means it is unfavorable to people who want to drive and go far away, stuck in the city as a jail. The highways and transportations run only as their initial arrangement, leading to a lack of freedom for people.

As a result of the impracticality of maintaining and governing the city, the original concept of EPCOT was eventually abandoned after Disney's death, since the Disney production evaluated it as a too risky project if there is no core director anymore, and the land of Florida eventually became the Walt Disney World Resort. A cluster of city blocks could not be sufficient itself since the whole world is correlated with roads and systems. Even though his original idea and intention are romantic and idealistic, controlling the entire city and residents with one perfect system is not feasible. Considering connections between surrounding areas is crucial, not isolating them to make cities work.